1859. FIFTY-EIGHTH YEAR 1916

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AMERICAN GAS LIGHT JOURNAL

VOLUME CV., No. 22. Whole No. 3064. | NEW YORK, MONDAY, NOVEMBER 27, 1916. | Subscription, $3 Per Year. $4 Canada. $5 Foreign.

Cast Iron Pipe has given St. Louis two thousand miles of satisfaction

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CENTURIES
MORE THAN 250 YEARS OLD

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KOPPERS

BY-PRODUCT

COKE AND GAS OVENS

The most efficient method of carbonizing coal is in KOPPERS OVENS and the best coke and by-products are produced by this process.

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Pittsburgh, Pa.

Builders of

By-Product Coke and Gas Plants
Tar Distilling Plants
Ammonia Recovery Plants
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GAS LIGHT JOURNAL

VOL. CV., No. 22. NEW YORK, NOVEMBER 27, 1916 WHOLE No. 3,064.

Surface Combustion Affords Efficient Means of Converting Coal-Fired Brick Bake Ovens to Gas

All Work Necessary in Ordinary Oven is to Cut an Opening in Wall, Insert Burners, Cement Up Cracks, Cover Grates with Bricks on Which is Laid Refractory Bed and Connect the Pipes

BY HENRY L. READ

Engineering Department, Surface Combustion Company, Long Island City, N. Y.

The principle of surface combustion has been so extensively studied and described recently that only a brief outline of its fundamentals will be attempted in this article. For detailed works, the reader is referred to Lucke, *Journal of Industrial & Engineering Chemistry,* Vols. 801 and 960, and to Ellis, *Bulletin American Institute of Mining Engineering,* number 69, page 945 ff., with discussions by Lucke et al.

The process may be defined as a continuous localized burning of a homogeneous mixture of air and fuel in exactly the correct combining proportions for complete combustion without any excess of either constituent. Many ways of producing the desired effects have been evolved, but the one referred to in this article is known as the "impact" method. In this, as in other forms of surface combustion, the heat is localized at a point where the speed of flame propagation of the mixture of air and fuel equals the speed of travel of that mixture.

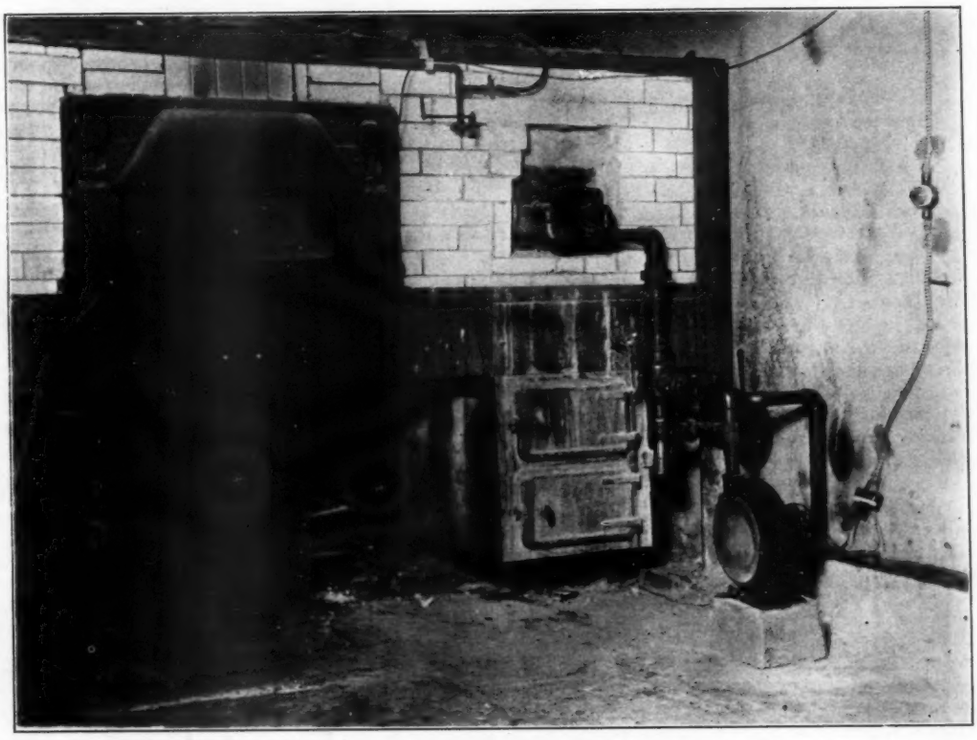


FIGURE 3: COMPLETE INSTALLATION IN NEW YORK CITY BAKER'S SHOP

Figure 1 illustrates the impact burner. The mixture which has been made thoroughly homogeneous and properly proportioned in a special proportioning mixer and inspirator is led to the back of the burner through a suitable pipe. Moving forward, it reaches the burner nozzle where its velocity is obviously increased. The dimensions of the nozzle are such that as long as the pressure behind it is more than about 2 in. of water, the velocity of the mixture in the nozzle is greater than the speed of flame propagation (back fire). Since the mixture travels too fast to burn at the nozzle, it is clear that it can never burn at all unless it is slowed down. It is here that the refractory bed come in. This serves simply as a baffle to reduce the speed of the mixture so that ignition may take place. The combustion occurs in the interstices between the lumps of refractory material, ordinarily alundum or carborundum.

Baffle Also Serves to Bring Cold Mixture Rapidly to Ignition Point

The value of the refractory bed, however, is not only as a baffle, although this is an important reason for its use. It serves also as a means of bringing the incoming cold mixture rapidly to its ignition point, as a reservoir of heat, and as a source of radiant energy so important in many heating problems. It adds to a gas fire the effect of a glowing bed of hot coals, and may be said to combine the advantages of the two methods of heating with the disadvantages of neither. At the same time, it should be understood that surface combustion offers other means of producing its results. These will be taken up in future papers.

In the adaption of coal, coke, or wood fired brick bakers ovens to gas, much difficulty has hitherto been experienced in obtaining the even soaking heat at the low temperatures involved by the usual gas burners, whether of the blast or atmospheric type. One method that gave promise of some success consisted in playing jets from blast burners mounted on swinging brackets on first one part of the arch of the oven and then on another. But the effect of the hot gases merely passing over the bricks could not seem to duplicate the effect of a highly radiant coal fire, no matter how

or where the gas burners were directed. Moreover, there was always the danger of overheating and weakening by unequal expansion some portion of the arch if the baker became careless and did not watch the burner properly. Further, since the ovens were generally of a fair size, averaging about 12 ft. x 14 ft., and the baker not a man with a sufficient knowledge of combustion, to get the most economical results with gas, the cost of operation was often excessive, and the increase in capacity very slight.

Conversion of Oven

The construction of the ordinary bake oven is one that lends itself readily to the use of surface combustion, and all the difficulties experienced are easily overcome by this process. As the coal grate is usually in one corner of the oven, all the work necessary is to cut an opening in the oven wall at this corner, insert the burners, illustrated in Figure 1, cement up the cracks, cover the grates with bricks on which is laid the refractory bed, and connect the pipes. It has been found that two burners mounted in a metal case and properly bricked up as shown in

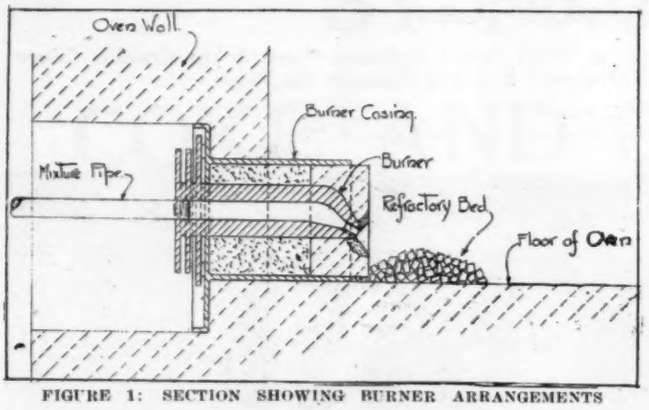


FIGURE 1: SECTION SHOWING BURNER ARRANGEMENTS

Figure 2 affords the best way of handling the problem. Figure 2 also shows the various accessories used. It will be noted that in the face of the brickwork are three openings. The two at the sides are the burners; the one in the middle slightly higher than the others is a lighting hole. Figure 3 shows a complete installation in a New York City baker's shop.

Referring to Figure 2, gas at ordinary pressure (say 2 in. of water) enters through the pipe leading to cock D, and passes through the governor B, which holds the gas pressure constant at that of the atmosphere. Thence the gas goes through the adjusting angle glove valve E, to a nozzle in the body casting which is located close to the narrowest part of the Venturi throat A. The air comes from blower F, through cock C, to the body casting, and thence around the outside of the gas nozzle through the throat A. In A, by its velocity, the air sucks in the correct proportion of gas and mixes perfectly with it.

The dimensions and construction of these parts are such that no matter what amount of air is flowing, the correct amount of gas for complete combustion without any excess air is supplied. In other words, the control of the fire is entirely in the air valve. When more heat is desired, the air valve is opened wider. When less heat is desired, the air valve opening is reduced. All this is made possible by the fact that the suction due to the air in the throat varies with the amount of air passing, and that, since the pressure in the gas nozzle is constant, the amount of gas going through it varies with the suction outside of it in the throat. Consequently, the amount of gas in a given time varies with the amount of air.

Adjustment of Burners Taken Out of Operator's Hands

It will thus be seen that this method affords the advantage of taking out of the operator's hands the adjustment of the burners. The only use of the gas cock D is to turn the gas on or off. The adjusting valve E, once set, should not be disturbed. This fact leads to very appreciable economy in gas consumption, which economy is greatly increased by the surface combustion method of burning the fuel.

Among the other advantages may be mentioned:

Increased capacity, due to the speed with which an oven may be brought back to temperature after it has cooled off during a bake.

Uniform temperatures.
Control at all times.
No coal or ashes.
No kindling.
Clean oven.
Clean shop.
Clean product.
No grate repairs.
No coal storage space.
Less painting of oven and shop because of increased cleanliness.
Less repairing necessary on oven.
No slagging of bricks and coal.
Continuous operation.

Comparison of Operating Costs

Comparing the cost of operation of a surface combustion gas-fired bake oven against the same oven heated by coal, we find that the cost of the coal per month averaged $15.00, with coal at $6.50 per ton, and the cost of the gas $25.00, with gas at $0.80 per 1,000 cu. ft.

The advantages of the gas equipment brought out above, chief of which was the increased capacity, completely overbalanced the increased cost so that that there was never any question that the gas was far the most economical and satisfactory.

In another similar oven, the coal cost was $20 per month against a gas cost of $35, with fuel at the same rate as before. In this case, too, the baker figured that the advantages, this time chiefly the one of being able to dismiss one man whose time was largely taken up in tending to fires, cutting wood, clearing out ashes, cleaning up the shop, etc., more than overcame the difference in the price of fuel.

As to amount of gas per pound of dough, it is very difficult to obtain anything like accurate figures as very few bakers make any attempt at keeping such records. The average of some test runs in a number of different shops indicates that about 1.1 cu. ft.

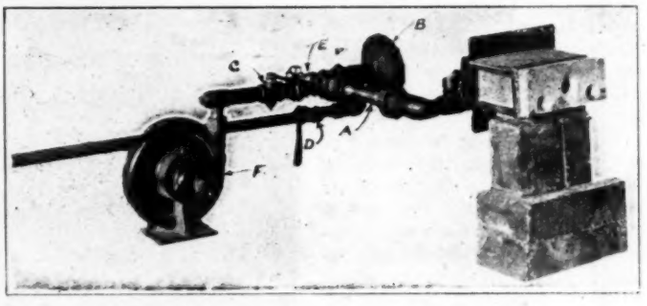


FIGURE 2: VARIOUS ACCESSORIES USED

of New York City gas per pound of dough is not far from the truth in ovens of the type referred to.

In keeping the cost down, very much depends on the way the oven is handled, and, particularly, in the manipulation of the flue damper. It has been found that the best results are obtained when the damper is left closed all the time except for a few minutes after the fire is first lighted. The only point in having the damper open this long is to allow any partly burned gas which may be formed at the moment of lighting to be swept off up the chimney. After this has taken place, it is desirable to carry a slight pressure in the furnace, allowing the products of combustion to escape through the cracks around the damper and the small opening in it, if there is such an opening, and around the door. In additon to the above, an intelligent baker will save gas by arranging his work so that substances requiring a fairly low temperature, e. g., pies and cakes, will be cooked after foods like bread which need a strong heat. In this way one firing of the oven will suffice for the two charges since there will be enough B. t. u. stored in the brick work to take care of the first-named article after the bread has been removed.

Advertising Possibility

It has been found that the bakers get better results from the ovens when they can be persuaded to buy and make use of thermometers of the proper range. There are a number of satisfactory makes on the market. In installing them, care must be taken that the bulbs do not lie in a position where they can be affected by the direct rays from the fire bed, as this will cause readings very much higher than the true oven temperature. The bulbs

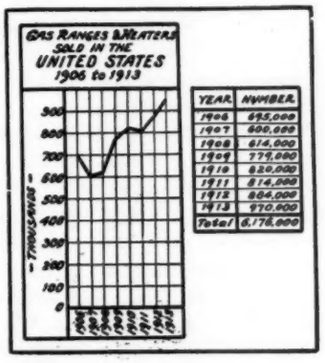
should likewise not be placed in the line of passage of the flue gases since this will produce a similar, though less marked, effect.

In conclusion, it may be said that the workmen and the owner of the bake shop are greatly benefitted by a modern, sanitary plant such as is possible by the use of surface combustion. The advertising possibility is one that specially appeals to the latter since he will have a place which he can show to visitors to impress them with the cleanliness with which his operations are conducted. In these days of pure food laws and Board of Health campaigns, such a point is not to be overlooked.

Bar System of Charting Has Little to Recommend It for General Application to Gas Company Records

Stanley C. Tarrant Discusses Graphic Presentation of Gas Company Statistics—Peak Top Method of Drawing Curves Has Much to Recommend It

Unlike the system of accounting used by most gas companies graphic methods of presenting data have not been standardized, and if several persons are given the same data to chart, the probabilities are that each will go about it in a different manner. Although the same data can usually be charted correctly in several different ways, there is only one best way, and before preparing charts the gas man should carefully consider which particular form of chart will bring out the desired points the most graphically, stated Stanley C. Tarrant, in his paper on "The Graphic Presentation of Gas Company Statistics," presented at the recent annual meeting of the National Commercial Gas Association.



YEAR	NUMBER
1906	695,000
1907	600,000
1908	614,000
1909	779,000
1910	820,000
1911	814,000
1912	804,000
1913	970,000
Total	6,778,000

Horizontal Bar System

The horizontal bar method of charting makes a very spectacular showing, but is not the best form to use when it is desired to make a comparison of one year with the other. In order to draw such a comparison it is necessary for the eye to look to the right and left at the same time, and such comparison can only be obtained when the chart is drawn to so small a scale that the ends of the bars for both years can be seen when looking straight down on the chart. When, however, each year is studied separately, a fairly clear picture of the monthly fluctuations is shown by a chart of this kind.

The best form of horizontal bar chart to use when monthly comparisons are sought is one in which the bar for each month of the current year is shown over the bar for the same month of the previous year, thus rendering possible a very accurate and rapid comparison.

A vertical bar chart is in some ways preferable to the horizontal bar method. With this form of chart a better idea of general conditions during each year can be obtained, as with a vertical arrangement of the bars an up and down effect is obtained, thus making the monthly fluctuations stand out plainly.

The bar method of charting is perhaps the most popular form of graphic presentation, and for that reason the most widely understood by the general public. Owing to this fact it will be found a very excellent method for display or advertising purposes, but it has little to recommend it for general application to the records of a gas company. It requires more drafting, uses more space and cannot be so generally applied as other forms of graphic charts.

Flat Top Form

The flat top form of chart has been much used in railroad accounting, and although it shows the fluctuations in a graphic manner, it is fast falling into disuse owing to its several objectionable features. In the first place, it requires considerable drafting, there being three lines to draw for every point instead of two. Another disadvantage of the flat top method is seen when two or more curves intersect one another on the same sheet. The vertical lines must coincide, and it requires considerable care to draw one curve over another so that the vertical lines do not run into each other. The horizontal lines will cause a like trouble whenever it happens that the figure to be plotted for a month of the current year is exactly the same as that for the same month of the previous year. Apart from disadvantages in drafting, this form of chart is not so convenient for comparative purposes as the peak top chart.

The peak top method of drawing curves is a typical example of the form of chart which can be the most generally applied to the records of a gas company. Although the bar method of charting has many advantages for display and advertising purposes, the peak top curve is far better for every day use, and should be used in preference to any other form of chart when practicable. It gives a more understandable picture of conditions and also has the advantage of simplicity in drafting.

Suggestions for Preparing Charts

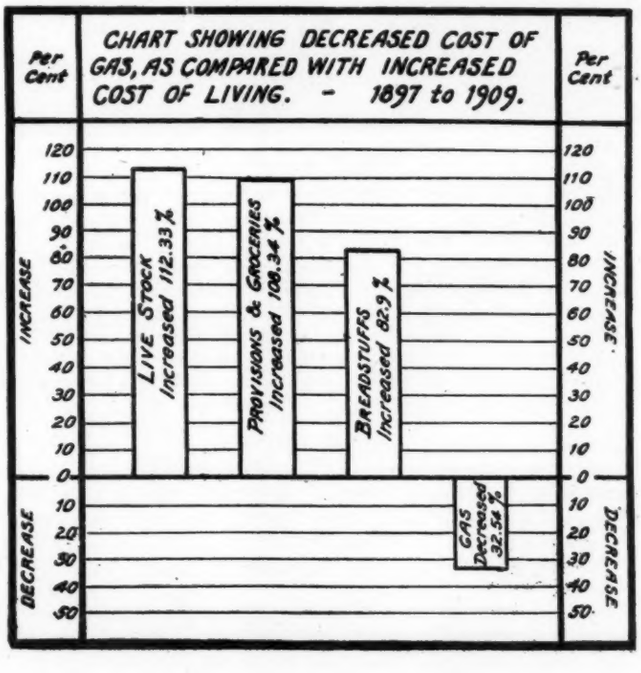
When preparing charts the foremost aim of the designer should be towards uniformity of method. It is very annoying to have to study a series of charts in which uniform methods have not been used, where for example, the vertical scale of one chart is on the left, while on a second it is on the right hand side, or where the horizontal scale runs across the top of the sheet on one chart, and across the bottom on another. These details are small in themselves, but uniformity in the method of preparing them adds greatly to the value of the charts as reference records, and is very desirable.

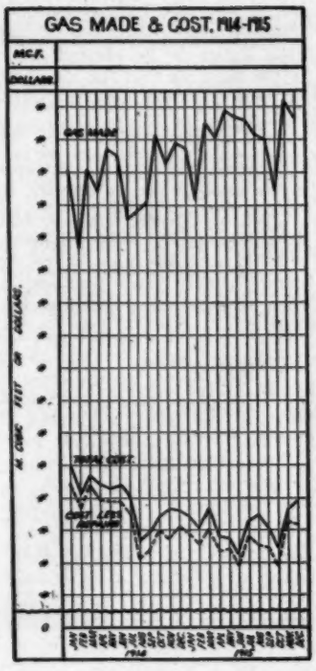
All charts should be given a comprehensive title, that there may be no doubt as to what data the chart is intended to cover. This is especially necessary in connection with separate exhibits used for illustrating statements in special reports, as when the charts are not given distinct titles they are valueless as records when detached from the reports.

The vertical scale on all charts should be arranged on the left hand side, as the reader will find this most convenient when studying the chart. In graduating this scale, considerable thought and care are required, as a badly arranged scale often means that the resulting curve will give a distorted picture of conditions.

The zero of the scale should appear on every chart, and should be shown by a heavy line carried across the sheet. If this is not done the reader may assume the bottom of the sheet to be zero and so be misled. The scale should be graduated from zero to a little over the maximum figure to be plotted on the charts, so that there will be a space between the highest peak on the curve, and the top of the chart.

When dealing with very large quantities it is not always practicable to use a scale which starts at zero, and is carried up by even steps to a figure representing the highest peak on the curve. Such a chart would either be too large for convenient handling, or else the scale would have to be condensed so that only very large fluctuations would be indicated on the curve. In a case of this





kind the best practice is to start the scale at zero, and just above this point draw a wavy line across the sheet to indicate that the scale is broken at this point. This line can be very easily drawn with an ordinary serrated edge ruler as used by many accountants. The scale starts again on the upper side of the wavy line at a figure a little lower than the lowest point on the curve, and is carried up by even steps to a figure a little above the highest point to be shown on the curve.

On many charts it is not necessary for the curves to show a fluctuation of less than five or ten per cent, and it is sometimes more preferable to make smaller charts on which the curves will only indicate fairly large fluctuations, than to make very large charts on which the curves can be read on the scale within one per cent. This is a matter which should receive careful consideration before a chart is drawn, as very large charts are inconvenient to handle and, owing to this fact, are sometimes not given the attention they deserve. On every chart the numeral value of each point on the curve should be shown at the top of the sheet, as this avoids the necessity of estimating from the scale when numeral values are required. In cases where the numeral value cannot be shown conveniently at the top of the chart, a separate statement should be made on the same sheet. The curve will show the general trend of affairs, and if the executive wants exact figures they are available on the same sheet, thus combining a graphic and a written record. The figures have to be gathered for plotting, and it represents very little additional work to write them across the top or to list them by the side of the chart.

Practice of Drawing Several Curves on Same Sheet Not to be Commended

The practice of drawing several curves on the same sheet is not to be commended except in cases where the curves will not intersect. A crowded chart on which the curves frequently intersect resembles a Chinese puzzle more than a graphic record, and a report submitted in figures is to be preferred to a chart of this kind. Even when the curves do not intersect, they should be made in different colors in order that they may be readily distinguished, one from the other. It should be borne in mind that charts are sometimes studied under artificial light, and for this reason it is advisable to use colors that will stand out distinctly by virtue of contrast.

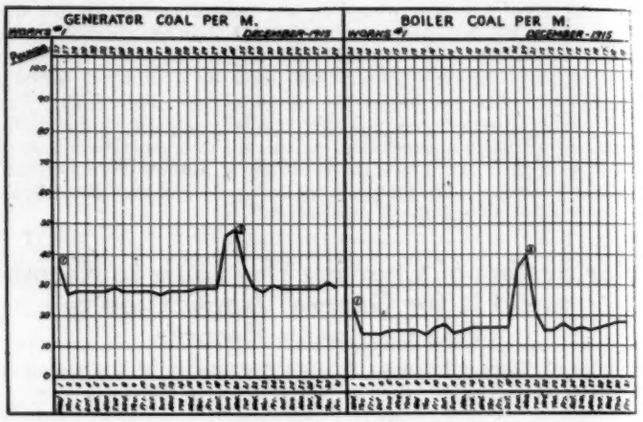
For example, lines drawn in blue or violet ink appear, under artificial light, very much the same as lines drawn in black ink, therefore these colors should never be used on the same chart. On the other hand, a chart carrying black, red, green and yellow curves can be very easily read under any form of light.

In cases where it may be necessary to draw more than four curves on the same chart, it is better to distinguish the curves by using lines of various forms than to use a colored ink that will not be a distinct contrast to the other colors on the chart. Thus with four colors available, it is possible to draw eight distinctive curves by making two curves of the same color, one being shown by an unbroken line, the other by a dotted line.

Use of Colors

In using different colored inks to show different items, or the same item for different years, it is a good plan to standardize the colors so that the same item or year on all charts is shown in the same color. This arrangement will avoid much confusion when constant reference has to be made to a large number of different charts.

When designating on a chart what items the different colored curves represent, it is not sufficient to make a key showing that

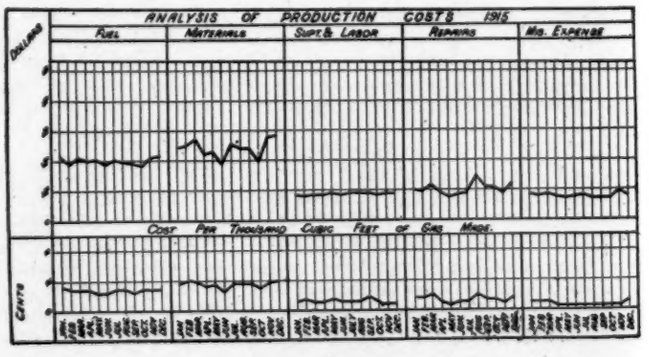


black represents one item and red another. In all cases where more than one item appear on the same chart, whether different colored inks are used or otherwise, each curve should have its title plainly printed over it near the scale column. Those who have had experience in reading charts will know how annoying it is to have to consult a key in order to learn what a certain curve is intended to represent.

Wherever unusual peaks or valleys occur on a curve, it is a good plan to mark these points with a small figure inside a circle. This figure should refer to a note on the back of the chart explaining the reason for the unusual condition. It is not always sufficient to show that a certain item is unusually high or low; the executive will want to know why it is that way. An efficient chart clerk will not wait to be questioned about unusual points on his curves, but will endeavor to find and note the reason for them before the chart is submitted to his superior.

When charts are to be prepared for illustrating printed reports, or for advertising purposes, consideration must be given to the fact that although the co-ordinate lines on the original chart may be blue, green, or red, they will be black when reproduced. Therefore, unless a very heavy curve line is used, there will be insufficient contrast between the curve and the co-ordinate lines. The best plan to follow when preparing charts from which cuts are to be made is to make the original on co-ordinate paper and from this original make a tracing, showing only those lines that are absolutely necessary as guides. The curve can be plotted more accurately on co-ordinate paper, but the finished chart stands out more clearly in print when the cut is made from a tracing. This method has been used in preparing all the illustrations accompanying this paper.

At the invitation of the American Society of Mechanical Engineers, a number of National Associations have appointed representatives to serve on a joint committee on "Standards for Graphic Presentation." This committee is making a study of the methods used for presenting data in graphic form. The value of this work cannot be overestimated, for, if simple and convenient standards are adopted and made generally known, it will result in a more universal use of graphic methods. Every gas man who is interested in this subject should procure copies of the reports of this committee as they are issued.



Many New Features Lend Interest to Exhibit at National Commercial Gas Association Convention

Attending Gas Men Find Exhibition Rooms Attractive Part of Convention—Lively Interest Displayed in Appliances and in Explanations of Those in Attendance at Booths

A meter that tells the cost of the gas being used at any particular time; gas lighting fixtures that chute the products of combustion off in such a manner that they cannot discolor the metal parts; a safety gas lighter, designed especially with the timely view of reducing the high cost of living; a stove lighter adapted for lighting the oven; the latest development in gas heaters using radiated heat; gas incinerators; gas boilers and fryers; ranges, etc., combined to make the exhibits an unusually attractive feature of the recent annual convention of the National Commercial Gas Association.

The Detroit Stove Works, of Detroit, Mich., was represented, among others, by C. T. Aaron, H. A. Barbour and H. D. Schall. Geo. C. Pennell and Arthur F. Glaessner were in attendance for the Union Stove Works of New York City.

The Michigan Stove Company of Detroit, Mich., showed the latest pattern Garland Hot Range equipped with elevated salamander with lever control attached to the grid. This company was represented by L. B. Young and Max Schultz. The National Commercial Gas Association had in its own booth text books, hand books, educational literature, window displays, etc. The Eclipse Gas Stove Company, of Rockford, Ill., was represented by George D. Roper, M. P. Roper, and Wm. H. Gaffney among others.

The Roberts Brass Manufacturing Company, of Detroit, Mich., had on display gas range cocks, hotel cocks, water heater cocks and gas valves. Earle W. Roberts and R. A. Roberts were the company's representatives in charge of the booth. The Estate Stove Company, of Hamilton, Ohio, was represented by David F. Kahn, J. D. Taylor and others.

The General Gas Appliance Company, of New York City, exhibited various ranges, cookers and water heaters of the triplex type. C. B. Elmer was in attendance at the booth. The Pittsburgh Water Heater Company, of Pittsburgh, Pa., had on display a full line of its heaters. The Baltimore Gas Appliance & Manufacturing Company, of Baltimore, Md., was represented by H. W. Hunter and Thomas C. Ratcliff.

The Mueller Manufacturing Company, of Decatur, Ill., had on display one of the company's large drilling machines for connecting mains and other features. F. B. Mueller, C. T. Ford and W. F. McCarthy represented the company.

The Utica Valve & Fixture Company, of Utica, N. Y., was represented by Joseph Ruud, Jr., and John W. Calder, and displayed steam valves, compression valves, stop and waste valves, stove cocks, service cocks, meter cocks, gas brackets and gas fittings.

The G. S. Blodgett Company, of Burlington, Vt., exhibited a fryer with a capacity of 150 doughnuts per hour, and a boiler which can be used for vegetables, dishes and other purposes. J. S. and R. L. Patrick were in charge of the booth.

The Cleveland Heater Company, of Cleveland, Ohio, had an exhibition of copper coil gas water heaters of the multi-coil type. It was represented by Arthur Friedman, Leo Friedman and Marshall R. Stewart.

The Meek Oven Company, of Newburyport, Mass., had on exhibition a line of Meek reel ovens. The Kitson Company of Philadelphia, Pa., represented by H. S. Fife and Wm. McCormick, showed a line of standard extra and extra heavy brass gas service and meter cocks, also a lock cock which seemingly requires a yale key to open, but can be opened or shut with an ordinary key. They also showed, for the first time, 1¼-in. and 1½-in. iron body brass plug service cocks.

The Comstock-Castle Stove Company, of Quincy, Ill., was represented by T. P. Castle and M. R. Merkel. The Superior Laboratories, of Grand Rapids, Mich., exhibited Stovoil. C. N. Keppel was in charge of the booth.

At the booth of the Royal Enameling & Manufacturing Company, of Chicago, Ill., one was particularly impressed with the confidence the company's representatives had in the ability of its snow flake and speckled enameled broiler pans. To prove it, one of the company's representatives, weighing 195 lb., was at all times willing to jump up and down on one of the pans placed on the floor. This metal will stand bending to 40 deg. without chipping, and will stand a 2200-deg. Fahr. temperature. Harry Warman and C. H. Francis were in charge of the booth.

The Crandall-Pettee Company, of New York City, showed its C-P reel oven. Paul Delaney was in charge of the booth. The Hays Manufacturing Company, of Erie, Pa., displayed service cocks, tapping machines, main drilling machines, etc. O. G. Hitchcock, Geo. B. Lytle and Chas. E. Mueller were in charge.

The Ruud Manufacturing Company, of Pittsburgh, Pa., showed Ruud standard water heaters and Ruud incinerators. A. B. Brill was in charge of the booth.

Recently Elected President of the National Commercial Gas Association

JAMES T. LYNN

The Tate-Jones & Company, Inc., of Pittsburgh, Pa., showed a 6 x 12 oven furnace. In the booth were. W. C. Buell, Jr., C. F. France and J. H. Knapp. G. V. Landreth, H. J. Long and F. D. Schneider represented the Long-Landreth-Schneider Company, of New Brunswick, N. J., which was exhibiting a line of heaters. J. M. Forbes was in charge of the exhibit of the Handy Manufacturing Company, of Philadelphia, Pa.

The Humphrey Company, of Kalamazoo, Mich., showed a Humphrey automatic heater, a Humphrey cottage heater, a blue enameled jacket tank heater and a cast-iron jacket tank heater. F. A. Lemke, H. S. Humphrey and J. D. Grady among others represented the company. W. F. Scully was in charge of the exhibit of the Gilbert & Barker Manufacturing Company, of Springfield, Mass.

The Stack Heater Company, of Boston, Mass., showed No. 1 and 2 Stack gas heaters, Stack multiple storage system and the

Stack snap-acting thermostat. E. S. Stack, president of the company, was in charge of the exhibit.

The Nightingale Company, of New York City, had on display Rickett incinerators in different sizes for the destruction of garbage and refuse, both wall and portable types; all equipped with troughs for the receipt and evaporation of drippings and with reburners for the destruction of odors. J. B. Ricketts, J. W. Aymar, Jr., and W. B. Cooke were in charge of the booth. The Reliable Stove Company, of Cleveland, Ohio, was represented by H. C. Fritz, F. G. Nicolaus and P. W. Hennings among others.

James B. Clow & Sons, of Chicago, Ill., had on exhibition gasteam radiators. E. V. Daly was in attendance at the booth. C. H. Bowman and Robert R. Updegraff represented the Sentinel Manufacturing Company, of New Haven, Conn., and J. E. Nason and Wm. R. Epp represented the Eriez Stove & Manufacturing Company of Erie, Pa.

The New Process Stove Company, of Cleveland, Ohio, was represented by John G. Way, M. A. Possons, W. G. Vought and W. G. Withers. R. K. Clark, F. W. Humphreys and J. C. Brown among others represented the Geo. M. Clark Company, Chicago, Ill. The Isaac A. Sheppard Company, of Philadelphia, Pa., had on exhibition various types of ranges. Howard R. Sheppard, James S. Allison and Howard W. Plucker were in charge. The Sill Stove Works, of Rochester, N. Y., was represented by Fredk. Will, Philip Will and R. W. Rogers. The Champion Stove Company, of Cleveland, Ohio, exhibited a combination gas range and kitchen heater. Fred C. Alber, C. J. Stratton and H. T. Edmiston were in charge of the booth. The Ringen Stove Company, of St. Louis, Mo., was represented by Arthur Stockstrom, R. L. Kahle, Chas. S. Smith and Geo. P. Hamman.

The Improved Appliance Company, of Brooklyn, N. Y., showed a display screen upon which were mounted pictures and data of numerous installations of stock and special improved appliances. They had on exhibit pyrogenetic burners, etc. S. T. Wilson, Gilbert Shadwell and others were in attendance. F. K. Berry, T. J. Moran and others represented the A. B. Stove Company, of Battle Creek, Mich. J. R. Stram, R. M. Thomson and F. L. Walter represented the Hale & Kilburn Company, of Philadelphia, Pa. The National Stove Company, of Lorain, Ohio, had an exhibition of three direct action ranges. Thomas Rath, H. C. Avery, S. E. Little and B. E. Meacham were in charge of the booth.

Rathbone, Sard & Company, of Albany, N. Y., exhibited miniature baby grands, standard cabinets with cathedral glass doors, new types of duplex single oven ranges and cookers. R. E. Sard, J. J. Garrison, G. M. Millspaugh, Charles J. Breen, C. C. Williams and W. C. Quinn represented the company. E. J. Post, Jr., was in charge of the booth of the Thomas, Roberts, Stevenson Company, of Philadelphia. Alfred B. Moran and D. T. Crowley had charge of the exhibit of the Peninsular Stove Company, of Detroit, Mich. The Weir Stove Company, of Taunton, Mass., was represented by M. E. Abbott. C. V. Roberts, Stanley Grady, R. Lockwood, Moss H. P. Dains, J. Warren Guise and E. M. Hawley represented the Roberts & Mander Stove Company, of Philadelphia.

The Welsbach Company, of Gloucester, N. J., exhibited semi-indirect lights with center stem in three designs; also a unique gas sign using the recently developed glass glower. A candle fixture candelabra was shown equipped with C. E. Z. lights, and the cretonne shade protected in such a manner that the shade cannot catch fire. A semi-indirect cone fixture, which costs no more than an arc lamp for office lighting was also shown, and a new line of semi-indirect lights with tubes passing down the chain so that the lamp can be swung at will. A straight pendant lamp was shown with a chuted effect which overcomes the tendency to discolor the figure.

Bayley & Sons, Inc., of New York City, displayed a dome rack designed for the purpose of concentrating the attention on domes. The racks save ceiling space and each can be illuminated individually or collectively. A clover design fixture was displayed in which one, two or three mantles can be used as preferred. In attendance at the booth were W. W. Barnes and Charles A. Ramirez.

The Oxweld Acetylene Company, of Chicago, Ill., and Newark, N. J., exhibited various acetylene generators, and oxy-acetylene welding and cutting apparatus. L. E. Ogden and E. J. West, Jr., were in charge of the booth.

The General Fire Extinguisher Company, of Providence, R. I., showed types of gas radiators. Geo. S. Barrows and N. W. Park were in charge of the booth.

The International Hale Gas Mixer Company, of Providence, R. I., were represented by S. H. Hale, C. R. Jones, C. L. Henderson and Tom Hulsey. The Safety Gas Light Company, of Haverhill, Mass., was represented by George J. Kelly, M. M. Daggett and J. D. McLean. A feature of this exhibit—aside from the box of candy—was a ten cent lighter which, as explained by one representative, was designed to reduce the high cost of living. The lighter will probably serve for one thousand lights.

The Mead Gas Heating Company, of Delawanna, N. J., showed a gas log in the open fire place, gas radiators, etc. In the radiators the company has adopted a different method of radiation, a pressed weld system being used which gives all the advantages of cast iron and a lighter body. This does away with a possibility of corrosion.

The American Meter Company, of New York City, had on display, among other things, a new cost meter which shows the cost of the gas being used at any price. This can be changed to indicate the consumption by merely changing the dial. In attendance at the booth were W. K. Harrington and Ernest Kerstein.

H. H. Greenfield and W. P. Hutchinson represented the Sprague Meter Company, Bridgeport, Conn., which showed a complete line of gas meters and governors. The Lezius' Automatic Draft Regulator Company, of Cleveland, Ohio, was represented by M. Lezius. James B. Slattery & Brother, of Brooklyn, N. Y., displayed gas-fired steam radiators and asbestos heating stoves. J. B. Slattery and J. M. Cammack were in attendance.

The National Tube Company, of Pittsburgh, Pa., exhibited "National" Matheson joint pipe with "National" coating. This coating is a well known method of protection of pipe against corrosion and electrolysis. Various types of pipe joints suitable for gas, water, steam, air, etc., were shown made up as in actual practice with small cut out sections to show construction of joint, also samples of wrought iron and steel pipe after several years' service showing relative durability of the two classes of material under identical service conditions. These samples were taken from lines installed side by side and afford an absolute comparison. Samples of various types of N. T. C. gas cocks, N. T. C. regrinding valves, Kewanie unions and N. T. C. fittings were also shown. L. F. Hamilton, W. L. Schaeffer and F. N. Speller were in attendance at the booth.

The Superior Meter Company, of Brooklyn, N. Y., showed Monel meter calorimeters. David Lambert and J. Brock were in charge of the booth. The Reznor Manufacturing Company, of Mercer, Pa., showed a complete line of Reznor reflector room heaters. J. T. Reznor, G. F. Reznor, J. W. Ayer, W. M. Graham and Charles Harbison were in charge of the booth.

The General Gas Light Company, of Kalamazoo, Mich., featured the new Humphrey radiant-fire in a white-tiled fire place, also radiant fire heaters of various sizes. In the lighting line, the Humphrey daylight unit for color work, one thousand of which are installed in the Marshall Field Company and a total of 10,000 of which are in use in silk factories in Chicago, was featured. A. H. Humphrey, H. E. Humphrey, G. A. Humphrey, J. P. Conroy, W. H. West, E. D. Brewer, G. H. Vroom and J. M. Coles were in attendance from the New York office. From the Kalamazoo office, R. H. Humphrey, W. F. Weadley and J. J. Knight were present.

The Storrs Mica Company, of Owego, N. Y., showed silk and cretonne shades for Welsbach Junior and C. E. Z. lights, made on mica protector frames. A. P. Storrs and Charles P. Storrs were in charge of the booth.

The Milwaukee Gas Specialty Company, of Milwaukee, Wis., showed its stove lighter adapted for lighting ovens, by the addition of holes on either side of the dome. W. H. Duggan and A. O. Rutz were in attendance.

The Brassart Fixture Company, of New York City, showed an Adam design dining room fixture with a silk shade and candle effect. A table set ready for dinner lent an enhanced and attractive finish to this display. N. W. Belmuth was in charge of the booth. The Strause Gas Iron Company, Philadelphia, Pa., was represented by L. J. Strause and Harry Strause. The Hoffman

Heater Company, of Lorain, Ohio, was represented by O. P. Simler, S. A. Ault, W. J. Langenheim and W. F. Spear.

Wm. M. Crane Company, of New York City, exhibited in addition to their standard line of "Vulcan" ranges and water heaters, a new hot plate which is a radical departure from the regular line of hot plates. Its top consists of inverted V-shaped bars one inch apart that run the full length of the top. This construction makes it impossible to smother the flame even though the entire top is covered, because the spaces between the bars act as flues. Regular range burners are used. This company has also developed an all-hot-top hotel range that promises to be an important factor in hotel appliance business as well as a new "Vulcan" single oven range with duplex oven. William M. Crane, H. L. Schutt and W. S. Cadwallader were among those in attendance at the booth.

New York Gas Companies' Display at Food Attracts 25,000

Most Modern Gas Lighting Fixtures and Fully Equipped Kitchen Shown—Also Industrial Appliances for Barbers, Restaurants, Etc.

More than 25,000 persons visited the New York Gas Companies' display at the Food Show, held at the Twenty-second Regiment Armory, New York City, Nov. 6 to 18 inclusive. A popular feature of the display was the daily drawings for awards in the shape of various gas-using appliances. Ten thousand tickets were filed in these contests. The bean-guessing contest for a gas lamp also attracted much attention.

Especially noteworthy was the display of gas lighting fixtures of the most modern types. Even unbiased opinion would concede that, from the point of attractiveness, they outrivalled the fixtures displayed by an electric company, which also had an exhibit.

A fully equipped kitchen was set up in the booth, and industrial appliances such as heaters, barbers' and restaurant equipment was on display.

The exhibit compared very favorably with the best booths, and at all times was well visited by the public. It is considered by officers of the companies that it has been one of the best advertising features that they have had in that section of the city. It is certain that it has helped in the illuminating end of its business, for many people expressed surprise at the efficiency of the modern gas fixtures. A number of orders were taken for heating appliances, and a more friendly feeling was promoted with the housewife.

The successful guesser in the bean contest came very close to a perfect score. Her guess was 6,195 beans. The jar contained 6,185½.

H. H. Minnick was in charge of the exhibit.

PRIZE DRAWINGS WERE ESPECIALLY POPULAR

THE MODERN GAS FIXTURES SHOWN DREW FORTH MUCH FAVORABLE COMMENT AND SHOWED UP TO BETTER ADVANTAGE THAN ELECTRIC FIXTURES IN NEARBY BOOTH

Cincinnati Rate Decided

The Ohio Public Utilities Commission has handed down a decision authorizing the Union Gas & Electric Company, a subsidiary of Columbia Gas & Electric Company, to charge 35 cents per thousand cubic feet of gas in Cincinnati, and has fixed a minimum meter charge per month.

This action in making effective the rate of 35 cents a thousand cubic feet for natural gas in Cincinnati, as adopted by the City Council last summer in the five-year rate ordinance, will mean an increase of more than $500,000 a year in the revenues of Union Gas & Electric Company.

The old rate for gas was 30 cents a thousand feet with no minimum monthly meter charge, while the new rate is an advance of 5 cents a thousand with a minimum monthly meter charge of 35 cents. All bills rendered for gas after Nov. 4 will be at the 35-cent rate and where the monthly gas consumption does not reach 1,000 ft., bills will be at a minimum of 35 cents a month. The 35-cent rate is in effect for a period of five years.

While a petition for a referendum on the five-year contract at the 35-cent rate has been filed no election under the petition can be held before next August and meanwhile the company can charge the rate as fixed by the Council and the utilities commission. President Freeman of Union Gas & Electric, who is in New York, says that the consumption of gas and electric current in Cincinnati and its suburbs, both in Ohio and Kentucky, is showing large gains and record breaking results are expected from operation in the coming months.

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Cast Iron Pipe Joints

Elsewhere in this issue we publish a letter from a cast-iron pipe manufacturer, which refers to the editorial on cast-iron pipe joints, published on page 282 of the Oct. 30 issue of this journal. The letter gives some interesting data on a type of patented joint for cast-iron pipes which has been used to a considerable extent, and should provide food for thought to gas engineers interested in distribution matters.

In justice to the manufacturer it must be explained that he is not advocating a type of joint on which his company has a monopoly. Pipes and joints of such class may be obtained from several companies. Whether or not this particular joint in general will, or will not, solve the problem of gas leakage or adapt cast-iron pipe to high pressure service is still open to discussion, but, in making this effort to supply those interested with valuable working data, this manufacturer has performed a service which we feel certain will be appreciated by many readers of this journal.

Selling Ranges in Winter

When any business grows so rapidly and prospers so marvelously as has the automobile business it must be because of some very good methods used in its conduct. It was only a few years ago that it was not considered possible to sell automobiles in winter. In fact we can all remember when there were very few machines in use throughout such season. Even now a goodly number of automobile owners lay up their machines with the coming of cold weather and do not put them into commission again until the following spring.

The immense production of the modern automobile factory, however, has caused a decided change in the attitude of the manufacturers and the dealers. A study of the automobile national advertising now appearing in the magazines will show that every effort is being made to stimulate the winter market. The fact that the great factories to be found in this industry are able to hold their organizations together and operate the year round proves that a real winter demand has already been developed.

Ever since its introduction the gas range has been considered as a summer product just as the automobile was in its early days. Few, if any, gas companies make as great efforts to sell ranges in winter as they do in summer. In fact some companies disband their sales forces with the coming of cold weather and reorganize again in the spring with the result that they never do have as efficient sales organizations as would be the case if they could keep the whole force busy throughout the year. All that prevents the use of the gas range in the winter to as great or an even greater extent than in the summer is the problem of heating the kitchen. Just as soon as any gas company solves this problem to the satisfaction of itself and its consumers it is able to sell gas ranges as readily in the winter season as in the summer season.

It therefore seems well worth the attention of gas men to pay far more attention to the kitchen heating problem than they have ever paid before. There are many ways in which it can be solved. In some localities it can be heated with gas, in others a direct connection with the furnace can be made while in others it may be necessary to heat this room with coal or coke. In every case, however, there is a simple and a very satisfactory way of solving the problem. After a satisfactory solution has been arrived at sales effort as intense, or possibly even more intense, than that exerted in the summer season, with a proposition to make a complete installation in the kitchen including the heating equipment or connection, and at a price which will permit of an allowance being made for the present equipment, will not only keep the summer sales force busy all winter long but will also keep the shop department busy.

As a result of such a practice a company soon develops a better shop department and a better selling force than could be developed in any other way. Every business man realizes the great cost of frequent changes in the personnel of his force, and, if some plan can be found which will decrease the present changes, he is sure to welcome it. The development of the winter market

for gas ranges is not only an easier and at least as practical a proposition as selling automobiles in winter, and just as automobile factories are now kept busy all the year round, with, in some cases, an exceedingly small turnover of labor, the employees of gas companies can be kept busy, and the turnover of labor be greatly reduced through the sale of ranges in winter.

A Million Dollars to Employees

In the news section of this week's issue there is published an announcement to the effect that the Consolidated Gas Company of New York, and its affiliated companies, have inaugurated a profit-sharing plan which will place in the hands of their employees an amount equivalent to the profits returned to stockholders—in round numbers, $1,000,000—per year. This journal does not take notice of this action editorially, especially for the purpose of commending the action. It cannot be doubted that in voting approval of the step that the directors of the company performed a generous act. But, in the final analysis, it represents nothing more nor less than sound business judgment.

No company understands more thoroughly the meaning of the expression "good service" than does the Consolidated Gas Company of New York. Even in its final reminders to its slow-paying customers it carries courtesy to the extreme. In giving this extra return to its employees, the company doubtless considers that it is making an excellent investment. In a sense, it figures that by so doing it can get its employees, even to the lowest grade, to adopt the same attitude towards the public that its executive officers know is the proper attitude, and which they themselves would adopt could they substitute themselves for a period in such lower posts.

It is because this journal considers such action the soundest of business judgment that it calls particular attention to it. Heads of gas companies, large and small, should read carefully the announcement. The explanation of one of the company's executive officers, spoken doubtless offhand, contains in it as valuable a lesson in intelligent management and sound business policies as is usually found in many laboriously prepared treatises on similar subjects.

Contrasting Similarities

By an odd coincidence, within the space of less than a week, two men, each a figure in his own industry, discussed and forecasted the future of gas lighting. Throughout each paper there were strikingly outstanding points of similarity, yet the conclusions reached were as far apart as the sun and the moon.

Speaking before a joint session of the New York section of the Illuminating Engineering Society and the American Electrochemical Society, W. R. Addicks, first vice-president of the Consolidated Gas Company, of New York, expressed the opinion that the gas mantle will always insure to the gas companies a large share of the lighting business. Speaking a few days later before the National Commercial Gas Association convention at Atlantic City, Samuel Insull expressed in no uncertain tones his opinion that our lighting business is doomed.

In introducing Mr. Addicks, the chairman declared he was qualified to discuss *any* subject with authority. What was said of Mr. Addicks can well be said of Mr. Insull. Thus, we have two thoroughly informed men expressing widely divergent opinions on the same subject. Since this subject applies to gas, this journal believes, however, that the weight of opinion among disinterested persons will rest with the views of Mr. Addicks.

An interesting feature of each address was the confession of uneasiness felt by the respective industries at almost the same period, and the impetus that was given to similar activities along other lines of endeavor by both industries, due to such uneasiness.

Speaking of the advent of the electric light, Mr. Addicks admitted that the gas industry feared for its lighting business, and busied itself in securing other markets for its product—power, heating, etc. The introduction of the Welsbach gas mantle came then and saved the day for gas lighting.

Mr. Insull, in almost similar tone and vein, admitted that the advent of the gas mantle gave the electric people, with their relatively inefficient lamp, a bad fright, and stimulated them likewise to seek out and obtain the power load which is now so important a part of their business. Marked improvements in electric lighting, according to Mr. Insull, kept electricity in the lighting field as an important factor.

Mr. Addicks is of the opinion that the gas mantle is the weapon by which the gas man can retain his lighting load. Apparently, he believes that progress towards increased efficiency, convenience and attractiveness in gas lighting has by no means attained its possible limit. Mr. Insull believes that developments in electric lighting have reached such a point that they have so far outstripped even the advantage of the gas mantle that there can be no question as to the future.

Two authorities in what might be termed opposing industries have thus expressed their views. Both unquestionably based their conclusions upon conservative reasoning, yet the decisions they have reached are widely divergent.

Coming Out of Our Shell

The gas man's decided disinclination—due to press of business or other reasons—to come out of his shell and make himself known to other branches of industrial activity and the general public has long been a seemingly incurable habit. Doubtless this is one of the reasons why we are so often informed that we are asleep, and, worse, that we are even lacking in ability and education. The labors assumed by W. R. Addicks in preparing and presenting a paper before two engineering societies, which are not essentially —though they are in part—gas engineering societies are especially to be commended. In the opinion of this journal it is a step in the right direction, and may, we hope, set a precedent that will be followed by others of similar standing to the great advantage of the industry as a whole. The gas industry has unquestionably as many, if not more, men of striking ability in proportion to the number engaged in it as has any other industry. The principal drawback to the gas man, however, has been that he didn't let anybody else know about it.

In presenting the speaker, the chairman explained in detail the difficulties it was thought he would encounter in getting a "gas" paper. He did not withhold from himself the meed of praise which was undoubtedly his due, that he felt his securing of such a speaker on a gas subject entitled him to.

We can readily understand that Mr. Addicks accepted the task with reluctance, especially so, since, as he explained, he was asked to prepare, on a few days' notice, a paper on a subject to which a man should properly devote several months. Aside from the peculiar conditions that existed in his case—a younger man, or one less prominent in the industry could afford to risk the inclusion of one or two half-considered conclusions, while one of his standing could not—there was the knowledge that he was assuming a task that would not directly benefit the gas industry. But this journal believes, as it thinks Mr. Addicks must, that the indirect benefit was so great as to almost overbalance in value the good that would have been attained by going to equal effort to prepare a paper for gas men exclusively.

We cannot afford to permit ourselves to be misunderstood; cannot afford to let others consider us without talent or ability merely because they are not acquainted with us, because we have kept ourselves secluded in our shells, and refused to come out among our fellow men and display the talents we know we possess.

Mr. Addicks is to be commended for thus adding to his regular labors to give outsiders a chance to properly judge our worth. He is especially to be commended because he did not talk gas as a gas man would, but in words that were readily within the comprehension of the layman, and, which, in consequence, were absorbed by the technically-trained minds attending them with the utmost ease. His address was listened to with enhanced interest because it was so easily understood, and those who listened received in a very short space of time a comprehensive history and appreciation of what gas has been, and its problems and possibilities in the future. It is to be hoped that many of those other figures in our industry of whom we can as justly feel pride in presenting before the judgment tribunals of those outside our own sphere, will do as Mr. Addicks has done, and, even though it does mean extra burdens placed on their shoulders, let others know of what we of the gas industry are doing and let them judge on a basis of real knowledge the class of man who is doing them.

Special English Correspondence.

Monthly Letter from Norton H. Humphrys, Salisbury, England.

Oxide Purification, and the Storage of Ammoniacal Liquor—The Gas (Standard of Calorific Power) Act, 1916—Falling Back on Home-made Devices

On previous occasions I have mentioned the valuable assistance afforded to the profession by the annual reports issued by the chief inspector under the Alkali Works Regulation Act, 1906. This year W. S. Curphey and his assistants have fully maintained their prestige in this respect, and these reports bid fair to become an important part of the classical literature relating to the technical side of the gas industry.

The direct process for the manufacture of ammonium sulphate has been in use, in connection with coke oven by-products recovery, for some years, but has not been regarded with favor at the Town Gas Works, in view of the possible effect of contact with acid solution on the heavy hydrocarbons in the gas. But since the calorimeter has come into use as a substitute for the photometer, the objection is to a great extent removed, and the direct process has been put into operation at several gas works, but so far the results are uncertain and variable. One of the advantages claimed for the direct process, as compared with the usual routine in gas works, is an increased yield of ammonia. But the best result shows no improvement in this respect. Others show a decided loss of ammonia, and also trouble with the oxide purifiers, and the two seem to go together.

Mr. Curphey has conducted a careful and elaborate investigation that goes a great way towards elucidating the cause of such difficulties, and of indicating the directions in which to look for the remedy. He finds that the inefficient working of the oxide may be due to the gas entering the purifiers in a hot and moist condition, and possibly not completely freed from tar, naphthalene, and hydrocyanic acid. The absorption of ammonia by sulphuric acid is an exothermic reaction, and the solution in the bubbler may acquire a temperature considerably exceeding that of the atmosphere. The saturation point, in respect to moisture, increases rapidly as the temperature rises, with the result that the gas, heated by its passage through the hot solution, carries forward some quantity of moisture. On reaching the comparatively cold oxide, the excess is condensed, and the oxide becomes too damp or sodden to ensure efficient action. In order to prevent this prejudicial effect, the temperature of the gas should not vary to any great extent, during its passage through the purifiers. To this end, the boxes should be well protected from the weather, as the difficulty is evidently more acute in cold climates, or where the boxes are in an open and exposed position. As the absorption of sulphuretted hydrogen by ferric hydrate is an endothermic reaction, it would be an advantage to use steam coils or other suitable means, if necessary, to maintain the contents of the purifiers at a temperature of not less than 60° Fahr. That the oxide is in the best and most active condition at a temperature between 60° and 80° Fahr. is a matter of common knowledge in gas works, and possibly one advantage incidental to the air process, is that the slight heat produced by revivification in situ tends to raise the temperature, stimulate the oxide, and enable the gas to carry away moisture and maintain the material in a condition not too damp. This moisture question becomes more acute, as the oxide accumulates sulphur, and loses in proportion in respect to percentage of free ferric hydrate, as any moisture in excess of that necessary to maintain the reactive oxide in a state of hydration, is likely to lower the purifying efficiency.

As regards solid or liquid matter carried in the gas, such as tar or oil fog, naphthalene, etc., oxide is an efficient filter, and would absorb the same, with the result that back pressure would be thrown on the system, the material would be clogged, and diffusion of the sulphuretted hydrogen into the pores of the oxide would be checked. Any excess of ammonia or hydrocyanic acid may exert a similar effect, owing to the formation of insoluble salts.

In order to prevent these troubles, it is recommended that the gas should not pass direct from the acid bubbler to the purifiers, but that a washer or scrubber supplied with virgin ammoniacal liquor should be interposed, and that the purifiers should be properly protected and worked in rotation in such manner as to bring the material richest in ferric hydrate into contact with gas richest in sulphuretted hydrogen, and the material richest in sulphide into contact with gas poorest in sulphuretted hydrogen. The direction of flow through the purifiers should be downwards, as securing less liability to caking of the material, and a more uniform rate of flow. The revivifying shed should not only be covered, but protected against the effects of driving rain.

As regards loss of ammonia in the course of storing and handling ammoniacal liquor, the results noted last year as to the protective influence of a film of oil, less than ¼ inch thick, on the surface of the liquor in store wells or tanks, have been fully substantiated by further experiments. All liquor inlet pipes should be carried down a sufficient distance below the surface, to avoid disturbing the film of oil, and all seal boxes or other open traps, where the oil film is not practicable, should be protected by means of soundly fitting covers. Attention is also directed to the use of overhead tanks, which may be exposed to the summer sun, and therefore to increased temperatures. They should as far as is practicable be dispensed with, but if unavoidable, care should be taken to minimize the evil by whitening the exterior, screening, or any other available means.

Calorimeter Versus Photometer

A large number of gas undertakings in all parts of the country, are taking advantage of the new arrangement introduced by the Board of Trade this session, for facilitating the adoption of the calorimeter as the legal standard for ascertaining the quality of gas, in place of the photometer, by the aid of a simple and cheap method of procedure. Naturally the local authorities as the representatives of the public, in districts where the gas supply is in the hands of private enterprise, are talking about the loss to the customers, or what to their ideas is worse still, the extra profit to the gas undertaking, for the most part in a general way, and with anything but a sound technical knowledge as to the real issues concerned. And the position is complicated by the fact that other local authorities, who happen to own the gas works, are by no means backward in availing themselves of the act, and that without any consideration as to possible prejudice to the interests of the consumer of gas.

This raises the question as to whether the user of gas is better off under a private company, than as a customer of the local authority. In the first case he has the unpaid representatives of the public to act as watch-dogs on his behalf, but whether they secure him any advantage is another story. He has the same remedy against the sellers of gas, as against any storekeeper with whom he may happen to deal. If the quality or price of the goods is not satisfactory, he can close the account and take his money elsewhere. Any go-ahead tradesman supplying goods to the public,—it may be gas or it may be anything else,—gives more attention to the requirements of his patrons, than to a blind compliance with some legal ordinance. In the second instance, not only is there no authority to take up the cudgels on his behalf, and there is not that degree of watchfulness over the quality and purity of the gas, that is extended to the private enterprise, but the concern is not managed with so much push and go, and the published accounts are more or less mixed up with other municipal matters.

Some authorities appear to have satisfied themselves that the heat standard is a step in advance, and in sympathy with modern requirements, while others claim that it is simply a means of taking the consumer at an advantage, and that if he receives a reduction in price, as a result of the new regulation, he gets

more than proportionate less value for his money. The increased demand for benzol and toluol, and the part that the gas companies have taken in adequately meeting this urgent national requirement, has led to the utterly erroneous conclusion that this means a very substantial new source of revenue and of increased profit, in which the consumer is justly entitled to share. The history of the last 50 years goes to show that private gas undertakings are always willing to share increased profits with their customers. Many municipal authorities, however, are in no great hurry to follow such an example, as they usually have one or two lame horses on hand that require financial assistance. So they talk about the relief of the rates. The private company has no rates that are in need of relief.

As a matter of fact, those who have followed my previous remarks about the tar market will not be surprised to learn that, so far from an increase of revenue, on sales of benzol and toluol, the market price of tar, inclusive of any extra allowance on account of those substances, is lower than at any time within the last 20 years. Few gas undertakings are to-day realizing more than 18/- per ton of 200 gallons of tar.

Resourcefulness of Managers Has Brought About Many Home-Made Appliances

The exigencies due to the events of the last two years have the effect of throwing managers of gas works more largely on their own resources, as was common some 50 years ago, when gas apparatus construction firms were few, and railway facilities slow and scanty. This especially applies to out-of-the-way country places, where even the assistance of a local engineer or machinist is not always available. In the course of a round of visits to several gas works thus situated, during the last fortnight, I was impressed with the number of home-made devices recently put into use, and that under the disadvantage of depleted staffs. One effect of the war is to bring many elderly men back to the scene of former labors, and although perhaps not quite *au fait* with the latest ideas in the way of carbonization and purification, many of them have in their time kept the gasholder off the bottom bearings under disadvantages that would stagger the latest additions to the ranks, who are accustomed to sit in a luxuriously appointed office and arrange things over the telephone.

The point is well illustrated by a correspondent to the *Gas World* with reference to a common difficulty, the corrosion of purifier covers on the weather line of the side sheets. Having found that both covers on his two purifying boxes were badly perforated, one was sent away to be re-sheeted, and notwithstanding the urgency of the job, three weeks elapsed before he could get it back. Not caring to risk the second one, it was stripped and some wooden battens fixed inside the framing, asbestos cement fibre sheets cut to fit, bedded with red lead, and secured to the battens with ordinary wood screws. The job was executed by the yardman, and was a complete success. There was no rust or corrosion, and nothing in the appearance to distinguish it from the other re-sheeted cover. There was no reason why small works should not repair their covers in this manner, at much less cost and inconvenience than any other process known to the writer.

The process appears to be also applicable to any other sheet iron apparatus that is not exposed to heat, such as a gasholder, or an old boiler that is utilized as an ammoniacal liquor store, or water tank.

Application of Gas to Heating of Tanks for Melting Semi-Fluid Products Striking Example of Economy to be Effected by Application of Radiant Heat

The application of gas to the heating of tanks for melting semi-fluid products formerly fired with coal or wood, offers a striking example of the economy to be effected by the application of radiant heat instead of convected heat, declared L. J. Platt in a paper presented at the recent annual convention of the National Commercial Gas Association. These pots are usually bricked in with wide ventilating spaces for coal or wood fires. The application of the ordinary type of blast burner is not economical. By completely closing the openings in the combustion chamber and leaving only sufficient flue outlet for the products of combustion, it is possible to apply radiant heat to this type of industrial work with a so much higher efficiency than with the ordinary blast burners that we are enabled to obtain this class of business.

Correspondence

Cast-Iron Pipe Joints

Sir: We were very much interested in your editorial of Oct. 30 on "Cast-Iron Pipe Joints."

As the gas fraternity is fully acquainted with the value of cast-iron pipe for underground use, we can appreciate that they are earnest in their endeavor to find some device which will make a more dependable joint, and still enable them to adhere to the use of cast iron on account of its indestructibility. Speaking of this quality brings to mind that the City of Rochester in 1907, when iron was selling at a high figure, removed from the ground some 4-in. lines because of the adjustment of insurance rates. After having cleaned the pipes they disposed of them for more than they originally paid in 1872. This occurred after they had used the pipes in service steadily for a period of 35 years. In view of all the above, we venture to submit the following information as our experience among some of our own plants in the use of cast-iron pipes for high pressure gas service.

The prices are figured from long use and experience in both lead and Dresser couplings, and include simply the difference in cost of the joints.

You must also take into consideration with this cost, that the Dresser joints will always be tight, never will leak, and will last practically, with lead tipped gaskets, as long as the pipe itself. There is no loss by leakage of gas, and no expense testing for leaks.

We have used cast-iron pipe and Dresser couplings since the year 1910.

The gas mains are high pressure and have carried from 15 to 40 lb. during all this time. We have yet to find the first Dresser joint that has had to be repaired, and in the future for all high pressure gas lines from 4 in. up, we expect and shall use the Dresser couplings in place of lead joints.

We have laid some wrought-iron pipe with screwed joints and a Dresser coupling for an expansion joint every 250 ft. These have also given us satisfaction, but when comparing the life of wrought-iron pipe with cast-iron pipe, the comparison is very unfavorable to the wrought-iron pipe, especially in any soil that contains limestone, cinders, or other material detrimental to wrought-iron or steel pipe. Cast-iron pipe will resist these constituents in the soil for a life time.

We use all cast-iron headless pipe, laid in a direct line, no bell and spigot or anything of the kind, or leaded joints anywhere in the lines excepting where you put in a valve. At that valve we use bell ends on the valves and lead joints for same, afterwards protecting it with a Dresser safety coupling, which would prevent the lead from ever working out, or the joint from leaking in any way, shape or manner.

4-in. Cast-Iron Pipe Joints Cost as Follows:

Lead		Dresser	
Labor	.40	Labor	.10
Lead	.24	Coupling	1.16
Jute	.02		
Coke	.03		
Waste and Loss	.026		
Diff. in Wt. of Pipe on a/c of Bell—10 lbs.	.15	More by .394c	
	$ .866		$1.26

6-in. Cast-Iron Pipe Joint Cost as Follows:

Labor	.40	Labor	.135
Lead	.33	Coupling	1.76
Jute	.02		
Coke	.03		
Waste and Loss	.035	More by .855c	
Bells @ 15 lbs.	.225		
	$1.04		$1.895

8-IN. CAST-IRON PIPE JOINT COST AS FOLLOWS:

Labor	.80	Labor	.50
Lead	.48	Coupling	2.00
Jute	.03		
Coke	.03	More by	
Waste and Loss	.051	.764c	
Bells 23 lbs.	.345		
	$1.736		$2.50

The use of this coupling as compared to a leaded bell and spigot joint will increase the cost—

1 per cent on 4-in. lines
1½ per cent on 6-in. lines
1¼ per cent on 8-in. lines

The extra cost to the user is overcome by the fact that the 10 to 15 per cent leakage in bell and spigot joints, is eliminated.

You are at liberty to use this information as you see fit, and we trust it may result in mutual benefit to the cast-iron pipe trade and such gas companies as contemplate the use of cast-iron for high pressure gas lines.

The figures above are tabulated as of September 1, 1916.

Yours very truly,

E. J. LAME.

R. D. Wood & Company,
Philadelphia, Nov. 14.

Publications

THE SIXTH ANNUAL REPORT OF THE BOARD OF PUBLIC UTILITY COMMISSIONERS FOR THE STATE OF NEW JERSEY, FOR YEAR 1915, has recently been issued. A 382 page book 6 in. x 9 in., summarizing the year's accomplishments as submitted to the Governor of the State in last report.

HAND BOOK OF CASINGHEAD GAS written by Henry P. Wescott and published by the Metric Metal Works. A handy stiff-backed book, containing the latest data and figures pertaining to the actual production of gasoline from natural gas.

DUPONT PRODUCTS: 111 page book, bound in black. DuPont Fabrikoid giving description of each of the company's products and by-products.

BLASTING POWDER: 63-page booklet, paper covers, illustrated; issued by E. I. du Pont de Nemours & Company, of Wilmington, Del. Gives history of company and a description of its properties. Discusses blasting powders, and advises in regard to their handling, transportation, storage and uses. Devotes 14 pages to blasting methods and 19 pages to coal mining, quarrying, railroad and road grading, coal and ore stripping, earth and clay excavation, etc. Three pages are devoted to a valuable list of "Don'ts" in the use of explosives.

Cites Striking Example of Efficiency of Radiant Heat in Industrial Work

L. J. Platt in a paper presented at the recent annual convention of the National Commercial Gas Association cited the ordinary baker's Dutch oven as one of the most striking examples of the efficiency of the application of energy in the form of radiant heat to industrial work. These ovens are usually heated by coal or coke and a greater percentage of the energy supplied is in the form of radiant heat.

It has been in the past very difficult to apply any existing gas burners to this type of work, due to the fact that too large a percentage of the heat in the ordinary gas burner is conveyed by means of convection. The result has been that parts of the oven were heated too much and other parts not properly heated, with the result that the baking was irregular and not at all up to the standard of work turned out when using a coal or coke fire.

By utilizing a system of combustion which will supply a greater part of the energy in the form of radiant heat and confining these sources of energy with the limits of the old coal or coke fire, the distribution of heat through the oven is entirely similar to that furnished with the coal or coke with the resulting similarity of heating effect throughout the oven, so that no change in method of baking or position of the loaves is necessary to duplicate the results obtained by coal.

Industrial Gas Problems must be Worked Out Along Purely Scientific Lines

W. A. Ehlers States That a Great Many Commercial Managers Do Not Appreciate Importance of Scientific Application of Heat to Industrial Operations

"A great many new business or commercial managers do not fully appreciate the importance of the scientific application of heat to industrial operations, or even the complex nature of problems which necessarily must be solved in order to design or specify equipment which will be adequate to meet the needs of the special work it may be required to do," asserted W. A. Ehlers, industrial fuel specialist of the National Commercial Gas Association, at the recent annual convention of the association at Atlantic City.

"How many of the men at this convention can bring to mind some serious failure of a fuel installation, in which not only a great deal of money had been spent but even worse, the entire confidence of the manufacturing company in your ability had been shaken or perhaps lost forever?" He continued. "How many of you can recall instances where a one, two or three horsepower boiler was installed when the requirements called for a boiler perhaps three or four times this size; or a burner placed for doing certain work when the capacity was found to be probably only one-half large enough? Just recently I found a situation in which a three horsepower boiler had previously been sold, installed and removed because it did not give service, and a coal boiler had been bought and installed. Figuring over this problem brought out the fact that an eight horsepower boiler would have been the proper size to place in service to do the work satisfactorily; but the opportunity had been lost due to the poor service rendered on the part of the gas company in the initial installation."

COSTLY LACK OF KNOWLEDGE

"I have in mind a plant in one of our large cities, involving the consumption of upwards of a million cubic feet of gas per month, where attempts were made by the gas company's salesman to place atmospheric burners under very large lead pots with nothing surrounding the burners and no provision made for a well insulated combustion chamber. That this was an utter failure is very evident. and, indeed, it was found almost impossible to take up the matter again with the factory management on other and more efficient lines. Again, I have known burners of 150 cu. ft. capacity per hour placed in soft metal furnaces, where the requirements called for a burner capacity of 400 cu. ft. per hour, and when results were not obtained, gas and not the gas company unfortunately received the blame.

"Fortunately, these conditions do not exist everywhere and it is gratifying to see many of our companies working along progressive and practical lines, selling equipment that is right and proper for the particular work it may be intended to perform, and if you will look into their methods you will no doubt find that they have recognized the need for men of special training for this work. As has been said many times in your hearing, the industrial fuel work of your company is a decided departure from the regular and usual practice of merchandising ranges, water heaters, irons, etc., for purely domestic purposes.

"In the case of domestic equipment you have two or three types of appliances which will meet the needs of almost every customer coming into your office, while with industrial work almost every case is special and requires, therefore, individual analysis.

"Again, you will find that the requirements of different cities for domestic equipment are virtually the same, while for industrial work two processes while fundamentally the same, are widely different in their form of application of the fuel, all of which emphasizes the necessity for having men of ability to work out these problems along purely scientific lines.

"Can you expect this of a man who has perhaps had no wider experience than that of simply selling a staple article to the public, requiring principally the ability of salesmanship to close the deal?"

News of the Gas Industry

Consolidated Gas Company of New York and Affiliated Companies Adopt Profit-Sharing Plan

Employees Will Receive Equivalent of Dividend Rate Paid to Stockholders—Total of $1,000,000 Per Year Will Be Divided in Proportion to Salaries

The Consolidated Gas Company and its affiliated gas and electric companies, including those in Yonkers, Westchester, Northern Westchester, Queens, and the Bronx, have adopted a profit-sharing plan. One of the executive officers of the company explained the plan as follows, Nov. 22:

"It is increasingly recognized that profit-sharing in some form promises more than anything else to stimulate the interest of employees in the success of the undertakings with which they are identified. This relationship tends especially to promote individual and collective effort and a better spirit of co-operation in the various departments of the complex organizations now required by the larger public utility corporations to render satisfactory service. Feeling, on the part of an employee, of an immediate personal interest by having a direct part in the results, tends perhaps more in this than in any other way to secure and maintain that standard of excellence so essential in the conduct of the utility which seeks the highest attainable ideals in the public service.

"In the desire to meet in the fullest sense their obligations to the public of New York, the directors of the Consolidated Gas Company and The New York Edison Company and the affiliated gas and electric companies have been studying this question with a great deal of care for some time past. The directors of these companies have now decided to pay to all employees, other than those of the executive and administrative staffs, receiving not over three thousand dollars per annum, a percentage upon their salaries or wages equal to the dividend rate paid to the stockholders of the Consolidated Gas Company. Quarterly dividends are now paid at the rate of 7 per cent annually, and, consequently, these employees, some 17,000 in number, will receive a like rate which will approximate $1,000,000 in addition to their salaries and wages. The first payment will be made on Dec. 15 next to all employees who, on Nov. 30, will have been six months or longer in the service of the companies, and, as in the case of the payment of dividends to the stockholders, these payments will be made by check.

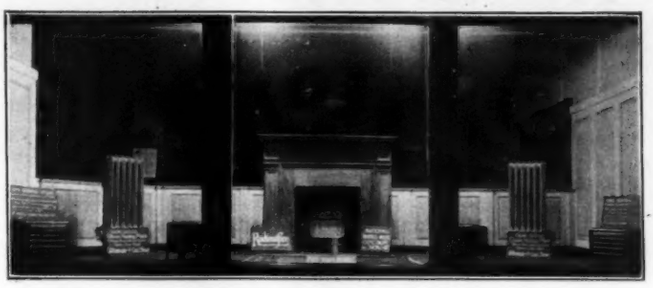
"It is very gratifying to the directors that they are thus able to show to their employees, upon whom the satisfaction of the public with the service of the company so largely depends, their recognition of the faithful and efficient discharge of their duties, by the adoption of this method of profit sharing."

Meter Accuracy in New York

The Consolidated Gas Company of New York has announced that during the month of October there were 896,262 gas meters in use in the Boroughs of Manhattan and the Bronx, and that only thirty requests were made by gas consumers to the Public Service Commission to test their meters for accuracy. Twenty-one of the meters were shown to be operating correctly; three were more than 2 per cent "slow," and six were more than 2 per cent "fast."

Five Gas Companies Ask to Raise Rates in December

Formal application has been made to the Public Service Commission at Harrisburg, Pa., by companies operating in Westmoreland, Beaver, Forest, Fayette and Greene counties to raise rates on natural gas during December. The companies filing are Big Beaver Gas Company for part of Beaver county. Proper Gas Company for Tionesta, Fayette County Gas Company for Fayette, Greene and Westmoreland. The applications are now being held for action.



HEAT FROM GAS RADIATOR SO INTENSE IT COULD BE FELT THROUGH WINDOWS

Gas Heating Pushed at Boston in Connection with Abnormal Coal Prices

The very high price of coal has given excellent opportunity for the active promotion of gas heating, and the present winter bids fair to be a time of phenomenal growth in this class of gas business. The Boston Consolidated Gas Company is featuring gas for heating in the city daily newspapers and in suburban weeklies in the company's territory. Theatre programs are also being used in the gas heating publicity. A large display advertisement pointed out the economies of gas for heating and cooking, especially at the present time of $9.50 to $12 anthracite coal. It called attention to the fact that 12 years ago gas in Boston was $1 per thousand cu. ft. while hard coal was $6.75 per ton. To-day gas is 80 cents and coal $9.50. The former making a 20 per cent reduction, and the latter a 40 per cent advance.

A large number of offices, stores, garages, etc., in the Consolidated territory have been equipped with gas steam heating facilities this fall. A printing establishment on Union street, Boston, having 32,000 cu. ft. of space, is to be equipped with eight gas-steam radiators, a store occupying a whole floor is being equipped with fifteen radiators, the office of a leather concern in South street will be heated by nine radiators, and garages connected with a high class apartment house in Brookline will be equipped with twenty-three garage heaters. Coal has given way to gas for heating stereotype metal in the printing department of the Boston *Daily Globe*. A private hotel in the Back Bay district is being equipped with two-section hotel ranges, boiler, bake oven, toaster and water heater, making an "all-gas kitchen."

During the latter part of last month and into November the company's large show window contained a very attractive exhibit of gas heating devices. A handsome gum-wood fire place occupied the central position, and contained a Radiantfire radiator, two units of the company's $27.50 steam heating plant, and smaller stoves desirable for heating the bath room, dining room or chamber during the chill autumn weather. The allurements of a blazing log during breakfast were pictured in the advertising, this means of heating obviating the trouble and dirt of open wood fires. A heater for the nursery is also convenient and pleasant. These purely gas heating appliances are adequate for the fall and early winter interval preceding very cold weather, but with the gas steam equipment, which constitutes a little steam plant by itself, the rigors of winter may be guarded against. The business houses mentioned above as having ordered gas steam equipment will rely upon them entirely for heating during the whole New England winter. The window exhibit above, which was designed and arranged by O. E. Emerson, was a practical exemplification of the heating efficiency obtained from the "Radiantfire" heater. In front of the heater was a thermometer which registerd 98 deg. Fahr. The heat was so intense that one could feel it through the show window, which was about 5 ft. from the heater.

Texas Gas Association Holds its First Annual Convention

Unanimously Votes Invitation to Four Adjoining States—Papers and Addresses of Vital Interest Make Convention Big Success

The gas men of Texas made a very fine showing at the first annual convention of the Texas Gas Association held in Dallas, Oct. 27 and 28. Although there are only 52 gas towns in Texas, at the opening session there were 37 paid-up memberships and several others who were present joined later.

The membership comprises both artificial and natural gas men, as well as men engaged in professional gas consulting work and those connected with the gas supply industry in the territory covered by the Association, and it was unanimously voted that an invitation be extended to the gas men of adjoining states to become members of the Association; there being no such organization in either Oklahoma, Arkansas, Louisiana, or New Mexico. A number of men from the above mentioned states have already signified their intention of joining.

The attendance showed 42 the first day, and 63 the second day. It is hoped that fully 100 will be in attendance at the next convention, which will be held the first Tuesday and Wednesday in October; at a place to be selected later by the board of directors.

The first day of the convention was given over principally to the reading of the president's address; W. H. Clifford, second vice-president, presiding.

In this address, which won considerable applause, President M. T. Walker set forth the aims and purposes of the association, emphasizing the good to be derived from such an organization; also referring to the rapid growth and development of the gas industry in recent years, and enumerating various subjects that gas men should be vitally interested in, and to which they should give their serious consideration at this time, amongst them being the "Recovery of By-Products," "Preservation of Gas Holders," "Conservation of Natural Gas Supply," "Improvement of Service to the Consumer," etc., etc.

The committee on by-laws: C. B. McKinney, chairman; submitted a draft of proposed by-laws, which was read and approved. The object of the association as defined in the by-laws, is the promotion of the best interests of the gas business along lines in harmony with the policy of the American Gas Institute. The membership is of two classes; honorary and active. There are two standing committees; a public relations committee and a technical committee. The former is to handle all matters covering relations between the public and the gas companies; the latter will have charge of all research work undertaken by the association, as well as the arranging for all papers to be presented at the annual convention. The dues are $5.00 per annum for one member of a company, and $2.50 for each additional member.

Under the head of "New Business" there were short talks by W. H. Clifford, W. H. Sedberry, J. S. Connelly, L. E. Tremain, A. T. Knies, J. D. Taylor, R. L. Underwood, and L. Dortsch, on various subjects pertaining to the industry; such as street lighting, commercial lighting, rates, etc. Mr. Dortsch also gave some very interesting information relative to the use of water gas tar as a roof paint.

At the second day's session, an extemporaneous talk on the oxyacetylene welding process as applied to the gas business, was given by R. C. Pierce, manager of the Linde Air Products Company of Texas.

F. M. Kenny, of Sherman, read a paper on "Low Pressure System of Natural Gas Distribution," showing the thorough and systematic manner in which a distribution system is laid out and the many precautions taken to insure the customer a satisfactory and uninterrupted service.

J. S. Connelly read a paper on "Brief Observations on the Development of the Artificial Gas Industry During the Past 100 Years," which was replete with facts and figures showing the wonderful development of the business.

J. Albin Johnson then presented his paper on "Water Heaters," emphasizing the wonderful growth of this industry, and the possibilities it offers the gas company for increased revenue. This was followed by a general discussion, which brought out some interesting and valuable information as to the practical uses to which water heaters can be adapted.

Following this, L. E. Tremain, illuminating engineer, spoke on "Gas Lighting and Its Possibilities," citing many of the more recent large commercial installations, as well as reviewing the accomplishments of gas companies along the lines of house piping.

The officers and directors, as elected at preliminary meeting in July, were unanimously re-elected, and are as follows: President, M. T. Walker, manager of the Beaumont Gas Light Company; first vice-president, F. J. Storm, vice-president Amarillo Gas Company; second vice-president, W. H. Clifford, manager Palestine Light, Heat & Power Company; secretary-treasurer, C. H. Seidenglanz, general manager Ruud-Humphrey Water Heater Company of Dallas, Texas. Board of Directors, C. A. Schwarm, C. B. McKinney, A. T. Knies, and W. H. Sedberry. Other routine matters were then taken up and disposed of, following which the members adjourned, and visited the Great State Fair of Texas.

Increase in Capital Stock May Bring Big Expansion For Albany Company

The Municipal Gas Company of Albany, N. Y., is to consider the increasing of its capital stock from $6,250,000 to $10,000,000, at a meeting called for Dec. 1. It is said that the proposed increase is to pay for moneys expended during the last five years (including about $1,000,000 worth of construction work) and for other improvements in contemplation. It was first stated that it was thought these latter "improvements" included the purchase of The Cohoes Gas Company. Now rumor has it that the entire electrification plant of the famous Cohoes Falls is to be taken over, with its manifold possibilities—for the sale of power to Cohoes and other places, Troy being mentioned in the latter case. If this is so, it will mean a big future for the owners of The Cohoes Gas Company.

Richmond, Va., Wishes to Enlarge Municipal Plant

Richmond, Va., has owned and operated successfully the municipal gas plant for a number of years and it is one of the city's most valuable resources. It has made large profits annually, rendered a good service and supplied gas to the public, in comparison with other cities, at a very low rate. All this has been accomplished by improved methods, intelligent administration and constantly increasing consumption of gas, due to the growth of the city. The cost of gas to the consumer has been justifiably reduced several times without diminishing the aggregate amount of profit annually. Gas in Richmond is now sold for 80 cents a thousand cu. ft.

The Chamber of Commerce favors the recommendation made by W. P. Knowles, superintendent of the gas works, that the Council appropriate $450,000 for the improvement of the works.

Municipal Plant Urged for Topeka, Kans.

That the city of Topeka solve the gas question for herself by building a municipal gas plant, was the suggestion made to the members of the city commission recently, by R. E. McBride of that city. It is Mr. McBride's contention that the city can manufacture gas that will compete with the natural gas. He said gas could be made from coal at a cost of 42 cents per thousand cubic feet. The gas company is now charging 50 cents per thousand for natural gas. Mr. McBride said that the heat value of manufactured gas is about three times that of the gas now sold to Topeka consumers, so even if the manufactured gas cost $1.50 per thousand, he argues that it would be just as economical and more dependable than the service now given. He suggested that the city purchase a coal mine or secure the output of one at Carbondale, fourteen miles from Topeka, manufacture the gas there and pipe it to Topeka.

Boston Newspaper Installs All-Gas Stereotyping Outfits

In addition to a 6-ton stereotyping outfit with gas firing, the Boston Daily Globe has installed an 8-ton outfit, so that now all its stereotyping equipment is operated by gas. It has also installed two metal melting pots, each of 3-ton capacity, to reduce type-metal and stereotype-plate scrap to ingots for recasting on linotyping and stereotyping machines.

Baltimore's Skyscraper Ready for Gas Company—Plans for Increasing Number of Shareholders

The Consolidated Gas, Electric Light & Power Company of Baltimore will move this month into the new twenty-story office building which has been erected with the view of expanding the facilities of the company for marketing its products and to increase its efficiency of operation. The new building, which is the tallest in Baltimore, is the first skyscraper to be erected in the heart of the shopping district of that city. It is at the intersection of the same streets as are the main office of the company at present. The unusual opportunities offered by the new building for the display of appliances sold by the company, will add greatly to the company's ability to increase its present large appliance business.

More than 1,700 consumers are buying stock in the company and paying for it in monthly installments with their gas and electric bills. Of the employees, approximately 225 own stock in the company. In addition to this number about 750 employees are depositing in a savings fund supervised by the company. These deposits bear interest and when sufficient money has accumulated to the employee's account, his funds are invested in the common stock of the company.

Large Sales of Room Heaters by Parker Companies

The Athol Gas & Electric Company and the Gardner Gas Light Company, two Massachusetts utility companies under the management of C. D. Parker & Company, Boston, have recently made phenomenal sales of room heaters. The former has sold since Oct. 1, more than 150, and the latter about 100 up to Nov. 15. On one day 22 heaters were disposed of to gas consumers at Athol.

Gas Main Across Cohansey River Completed

The Bridgeton Gaslight Company of Bridgeton, N. J., has successfully completed the laying of a 14-in. main across the Cohansey river, opposite the plant. The pipe is buried beneath the river bed at least 8 ft.. at its highest point. The work was done by A. H. Lupton & Son.

When the final touches were completed, J. B. Jones, superintendent of the Gaslight Company, and A. H. Lupton donned divers' outfits and were lowered overboard into the river. Twenty feet under water they grouped their way in the bottom of the pipe ditch, and personally inspected the joints in the main. Each, a novice in diving, reported the sensation under the water to be a most trying one, the pressure being very great.

The Gaslight Company will now connect the river crossing pipe with its plant, and the gas service will be extended through it.

Rates at Elkhart, Ind., Lowered

An order from the State Public Service Commission issued on Nov. 13, lowered the gas rates of the Elkhart Gas & Fuel Company from $1.25 to $1.05 for the first 15,000 cubic feet, with a graduated scale for larger amounts, making a reduction of over 20 per cent to the small consumer and of 10 per cent for the larger consumer.

Brooklyn Union Gas Company Elects Directors

At the annual meeting of the stockholders of the Brooklyn Union Gas Company in Brooklyn, held recently, the following directors were elected: William Rockefeller, David G. Legget, Elverton R. Chapman, Wm. G. Rockefeller, Henry H. Rogers, James H. Jourdan, Robert L. Pierrepont.

The president in his report to stockholders said that there was an increase of 6 per cent in the first nine months of this year in the use of gas throughout the borough. He also said that the company had sold 40,000 gas appliances during the first nine months of this year.

Chehalis, Wash., Seeks Dissolution

Petition for an order disincorporating the Centralia & Chehalis Gas Company was filed in the Superior Court at Tacoma by W. W. Seymour, president, who recites that the stockholders, at a recent meeting, decided to dissolve the corporation. The properties of the company were taken over by the North Pacific Public Service Company in 1915.

Gloucester, Mass., Company Makes Heater Campaign Unique

A real attention-getter was used in a window display contest by the Gloucester Gaslight Company in their recent Ruud water heater campaign. Four pure white rabbits hopped around in an effectively decorated window. Each one of the rabbits had a letter of the word "Ruud" suspended from his neck and the first person who saw the rabbits lined in a position to spell "Ruud" was to be presented with the rabbits. On Saturday, the last day of the display when they were having their last meal of carrots, the rabbits formed a perfect spelling line which was quickly detected by one of the watchers.

Lower Rates for Eureka, Cal.

The State Railroad Commission of California has issued an order fixing the rate to be charged by the Western States Gas & Electric Company for gas and distributed in its Eureka division. The new rates, which went into effect Nov. 20, retain the $1 monthly minimum charge for gas, a meter a month; $1.55 for the first 1,000 cu. ft. of gas used a month, and $1.30 a thousand for the next 1,000 cu. ft., and over two thousand cu. ft. a month is to be charged at the rate of $1.05 a thousand. Five per cent discount is allowed for payment within 10 days of date of bill.

All-Gas Kitchens Installed in Large Boston Institution

Boston College, an important educational institution in that city, has recently installed an all-gas kitchen in connection with its students' dining hall. Another all-gas kitchen has been installed in St. Joseph's Convent, Allston District.

8-Hp. Gas Fired Boiler Installed in Laundry

The Boston Consolidated Gas Company has installed an 8-hp. boiler in a laundry. This is thought to be the first installation of the kind on record.

Useful Instruction Card Distributed

The Boston Consolidated Gas Company has published a useful card of instructions to users of gas ranges. The card is about 7½ x 10 in. and is eyeletted at the top to enable it to be hung in the kitchen.

On one side of the card is set forth the "wasteful way" and the "wise-way" to run a 2-oven range. The "wasteful way" is to cook everything in the bake oven and on top, which wastes the heat in the lower oven. This requires 3 hr. 30 min. of time and 60 to 70 cu. ft. of gas. The "wise way" is to use the heat in both ovens, cooking meat below the oven burners. This process takes 2 hr. 15 min. and 35 to 40 cu. ft. of gas. When there is no baking, the housewife is advised to remove oven rack and place vegetables on the floor of the oven.

The other side of the card gives some directions in connection with the cooking of various foods, roasting, boiling and keeping the range clean.

Cost of Additions to Gas Plant at Fitchburg, Mass.

The Fitchburg (Mass.) Gas & Electric Company which is one of the lighting properties under the engineering management of Charles H. Tenney & Company of Boston, Mass., has lately made large additions and improvements in its gas plant, the cost of gas machinery aggregating $33,669, the cost of a coke pocket, trestle, extension of a retort house, steel supports for the retort house, chutes, etc., $18,013, and of mains relaid and laid $26,161. The total expenditures for additions, made up to June 30 were $106,687.

The following are the detailed figures for the gas machinery as filed with the Massachusetts Gas & Electric Light Commission in connection with the company's petition for authority to issue new stock to the amount of $251,600 for both gas and electric extensions.

Radiation pyrometer, from Brown Instrument Company	$150.50
Economizer for vertical retorts from B. F. Sturtevant Company	970.00
Cost of installation	759.47

Tubes, from National Brass & Copper Tube Co.	908.38
Labor by this company	187.22
Installation of second bench of verticals completed Dec., 1914. Work by Didier-March Co., Berlin Construction Co., Wiley & Foss and others:	
Labor and materials, bench foundations	$1,305.74
Building bench	25,644.00
Two Foxboro recording thermometers, Industrial Instrument Company	91.17
Covering walls with asbestos fire felt and magnesia cement with hard finish 2 in. thick, completed by H. W. Johns-Manville Company	240.00
Flue connections for No. 2 bench of verticals	672.70
Asbestos insulation of generator, by Nightingale & Childs	186.70
Increased capacity of purifiers, Western Gas Construction Co.	5,207.71
Four No. 346 angle stem union connection thermometer	60.00
Ammonia concentrator, steel tank ¼ in. steel, 42 in. diameter, 36 in. deep, Hodge Boiler Works	51.00
Labor, company's force	90.72
Other material	165.36

All Gas and Auxiliary Gas Heating Successful in Boston

The sales department of gas companies generally recognize the advantageous business to be derived from auxiliary gas heating of homes and business places. The value of all-gas heating for domestic and commercial establishments is less certain. While auxiliary heating, whether by direct means or through the medium of gas-heated steam-heating systems, is carried on during the gas company's lower period of demand, the use of gas for firing steam systems on which entire reliance is had for heating comes in most volume during the hours when gas is being used in largest measure for light. This applies both to the daily load and to the yearly curve, since the time of day and the season of the year when heating is required in largest amount correspond closely to the periods of need of artificial illumination.

The Boston Consolidated Gas Company is interested in both aspects of the problem of heating by means of gas, but is pushing the auxiliary heating proposition rather more keenly than that of gas-fired hot water or steam heating systems relied upon for exclusive heating purposes.

There are two excellent examples of heating systems in Boston Consolidated territory and that adjacent thereto, which illustrate the efficiency and benefits of the two systems. At Waltham, Mass., in territory served by the Newton-Watertown Gas Company, which buys its entire gas supply from the Boston Consolidated, is an all-gas-heated house. It is a large brick detached home, of eight to ten rooms. There are 713 sq. ft. of radiation, the installation being a Kane house heating steam plant, gas fired. The owner and occupant, Mr. Adams, reports that while the cost of gas is somewhat greater than for coal firing, the cleanliness and convenience more than compensate for the added outlay.

At Milton, Mass., is an auxiliary gas-fired hot-water heating system in the residence of Nathaniel Kidder. This is used about six weeks of both fall and spring, before and after the coal firing of the system. The gas heating apparatus is connected in with the coal-fired system in such a way as to enable either to be operated at will. It is said that the auxiliary system, if carefully operated, costs little if any more with gas fuel than it would to run with coal at the fall and winter seasons. In winter weather, gas fuel would doubless cost at least double that of coal for the same work, according to the gas people. It is significant of the great convenience and cleanliness of the gas systems, that once installed they are never removed. Their automatic regulating feature commends them to users, who are relieved from all care of the heating element whatsoever.

The Boston Consolidated company is now installing an auxiliary system in a large residence on Marlboro street, Back Bay. There will be 21,000 sq. ft. of radiation provided by means of the gas-fired apparatus, out of the 46,000 sq. ft. comprised in the whole hot water system. The gas apparatus, which is a Kane boiler, newly designed for the purpose, is connected in with the system, which is also provided with coal-firing facilities. The gas boiler is constructed on the sectional plan and can be added to if the owner wishes later to heat entirely by gas. A greater economy even than Kane boilers of previous construction is claimed for this apparatus.

The auxiliary heating load on the gas company's system comes principally between 7 and 10 a.m., the lowest point in the day's lighting curve. The use of gas for fall and spring heating flattens the yearly curve, since the peaks for lighting come in the latter part of December, the time when coal firing is resorted to. A small evening peak for the heating service comes between 5 and 6, after store closing and before the bulk of the lighting load begins.

Bellefontaine, Ohio, to Build New Gas Plant

Bonds in the sum of $45,000 will be issued by the city of Bellefontaine, Ohio, to build a new artificial gas plant. Gas is now being used in 80 per cent of the homes for cooking.

Gas Plant Soon to be in Operation

The new gas plant at Bemidji, Minn., will be in operation by the first of the year, according to an announcement made by D. A. Frerichs, president of the Public Improvement Company of Minnesota. The modern one-story brick structure will be completed in about two weeks, and the work of laying the mains has been rushed as much as possible in order to finish before the ground freezes.

J. A. Cunningham Dead

J. A. Cunningham, export manager of the Welsbach Company at Gloucester, N. J., died Nov. 18 at his home in Camden, N. J. He was taken suddenly ill while in New York with heart trouble induced by acute indigestion, and was hurried to his home. He failed to improve, however, and on Saturday morning passed quietly away.

Mr. Cunningham was with the Welsbach Company for almost 20 years—fourteen years in the capacity of export manager.

Previously associated with gas fixture companies in New York, his life-time experience has been close to the gas industry. He was a man of fine appearance, being 6 ft. 2 in. tall and ruggedly built. Every inch a gentleman, characterful, kindly and with keen business acumen, he established in his career a world wide acquaintance that will mourn his departure.

Personal Notes

L. E. Martin, who for the past three years has been employed in the office of the Athol Gas and Electric Company of Athol, Mass., has been transferred to the commercial department of that company.

John St. John, Secretary-Treasurer and General Manager of the Madison Gas & Electric Company of Madison, Wis., was recently elected president of the Madison Board of Commerce.

S. C. Bratton, commercial manager of the Portland Gas & Coke Company, has received the handsome gold medal which was awarded at the annual convention of the Pacific Coast Gas Association held at Santa Barbara, Cal., last month, for reading the best pamphlet on general gas.

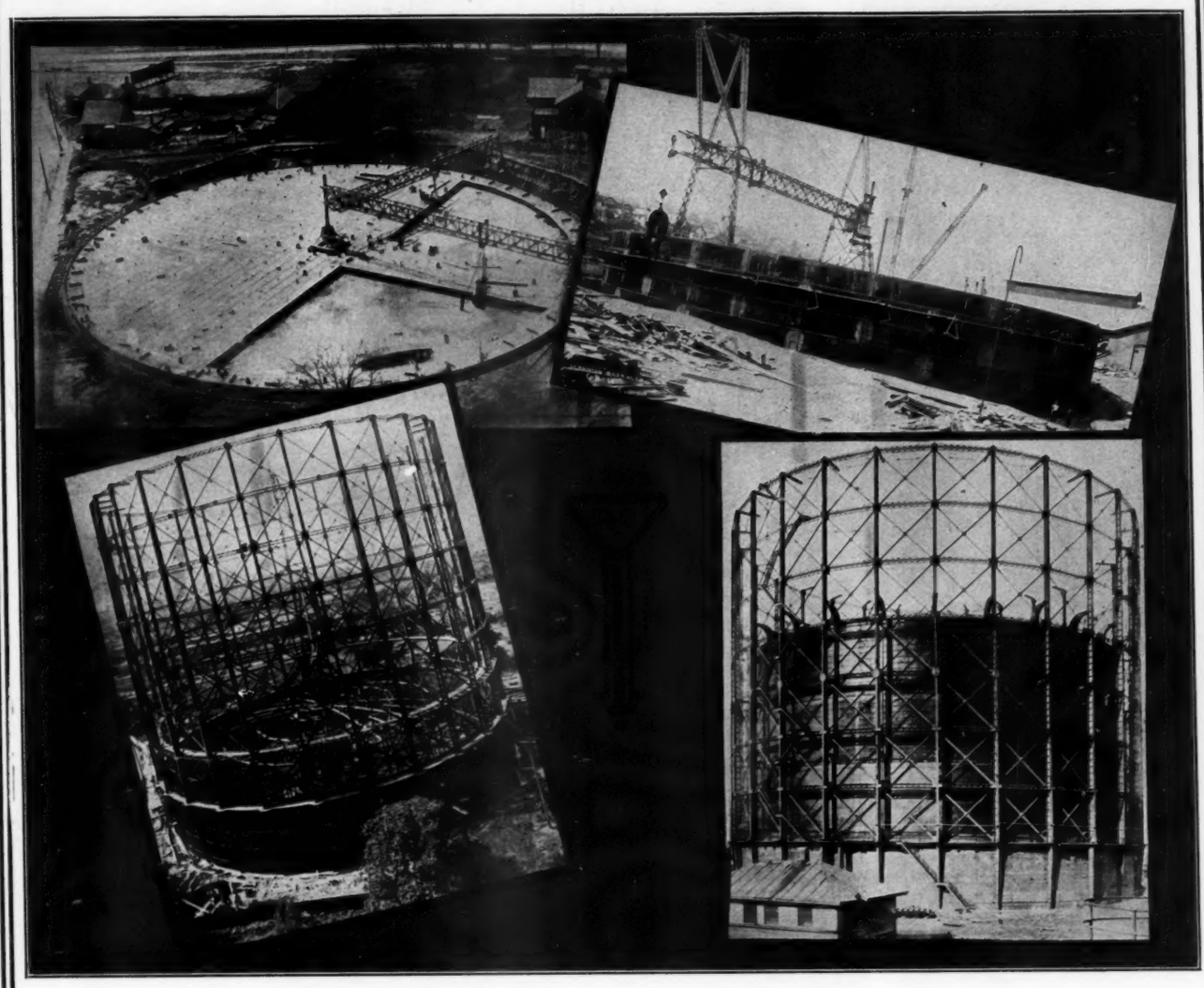
Frank M. Roberts, of the Haverhill Gas Light Company, thoroughly reviewed the manufacture of gas to his fellow members of the Rotary Club at a recent luncheon held in Haverhill, Mass.

J. G. Newbigging, immediate past president of the Manchester District Institution of Gas Engineers, recently died at his home at Heaton Moor. Mr. Newbigging was 53 years of age, and the eldest son of the late Thomas Newbigging.

Philip Cross, former head of the commercial department of the Denver Gas & Electric Light Company, and latterly of the Consolidated Gas & Electric Light Company, has re-entered the Doherty organization, and will be associated with the bond department of the New York Office.

C. H. Wharton, for 40 years superintendent of the Arlington Gas Company (Mass.), died at his home in Melrose. He had previously been connected with the Boston Gas Light Company for ten years.

E. R. Kelsey, advertising manager of the Toledo Railways and Light Company, and C. C. Kilbury, secretary of the Toledo Auto Club, have been named to represent Toledo at the coming Safety Congress in Baltimore, Md.



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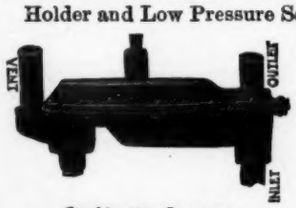

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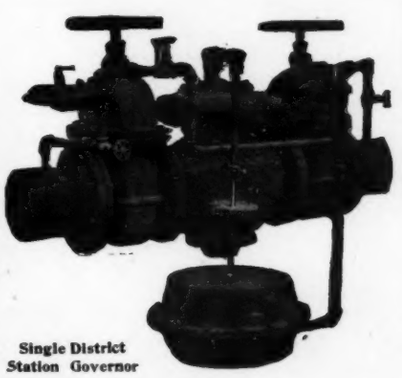

Single District
Station Governor

Construction Notes

Bloomfield, N. J., Gets Permission for Extension

The Public Service Gas Company has been granted permission to lay a gas main on Broad street, Bloomfield, 600 ft. south from James street. As the present main is not large enough to meet the demand, this step is considered necessary.

Wellesley, Mass., to Extend Mains

The Board of Selectmen of Wellesley, Mass., have granted permits to the Newton and Watertown Gas Light Company to occupy, open and obstruct Clovelly road and Windsor road, and to extend gas main as per plans filed.

Improvement for Worcester, Mass.

The Worcester Gas Light Company is about to build an addition to their plant at No. 5 Quinsigamond avenue, Worcester. It is to be of brick and steel construction, about 31 x 40 ft., one story high, with tile roof and will be used as a washing and condensing plant.

The Riter-Conley Manufacturing Company are doing the construction work.

New Lights for Newburyport, Mass.

The Newburyport Gas & Electric Company are installing new lights in the city, and expect to have the system in operation before the first of December.

Contractors Figuring on Cincinnati, Ohio, Plant

Many contractors from all parts of the country figured on the cost of erecting the superstructure of the new plant of the Union Gas & Electric Company in the West End.

W. W. Freeman has received the bids and it is estimated that the work, exclusive of the foundation, which is already in, and the equipment, will cost over $500,000.

Old Plant Torn Down

The work of wrecking the old gas company plant in Owen Park, Wis., has been commenced. The plant was built many years ago by a company of Eau Claire men and its building was hailed as a great step in the progress of the city toward metropolitan conditions.

Demonstration Lights for Tonawanda, N. Y.

The Niagara Light, Heat & Power Company has begun the erection on Tremont street of the modern gas lamps which are to be used for demonstration purposes in an effort to secure the new lighting contract in the city. These will be of the most up-to-date fixtures, and a great improvement to the town, if selected.

Gas Main Being Laid To Gresham, Oregon

A crew of men under the employ of the Portland Gas and Coke Company is busy digging a trench for gas pipe connections with the main laid this summer when the streets were hard-surfaced. In a few weeks, gas will be available for light and cooking. The line is being laid along the north side of the Base Line road from Ventura Park.

Medina, O., Company Is Extending Its Lines

The Medina Gas & Fuel Company is assembling materials for the construction of a pipe line from a point northwest of Wooster to near Burbank where the company already has a big main line. This company is extending its operations southward.

GRAND RAPIDS, MICH.—Plans for the new Rathbone building on Division avenue, N., to be occupied by the Grand Rapids Gas Light Company, are now in the hands of the contractors, the bids having been opened Nov. 17.

CINCINNATI, OHIO.—The new plant of the Union Gas and Electric Company, under construction on the river front has been inspected recently by the Engineers Club. They expressed their approval of the progress being made.

GALOWAY, N. J.—The Egg Harbor City Gas and Electric Light Companies have received franchises to lay mains and erect poles in Galoway township.

Financial Notes

THE MASSACHUSETTS GAS COMPANIES' combined net earnings of subsidiaries for September of $262,908 do not include any portion of the net profits made in September by the New England Manufacturing Company. The Massachusetts Gas Companies' share of the net profits made by that company was $95,783.

OHIO CITIES GAS COMPANY declared regular quarterly dividend of 62½ cents a share on its common stock, and an extra dividend of 5 per cent in common on the common stock, both payable Dec. 1 to stock of record Nov. 15.

THE WISCONSIN GAS & ELECTRIC COMPANY has filed an application with the railroad commission for authority to issue $6,500 of stock and $7,500 of bonds for the purpose of acquiring the property of the Campbellsport Electric Light & Power Company.

THE CONSOLIDATED GAS, ELECTRIC LIGHT & POWER COMPANY OF BALTIMORE, MD., reports gross earnings for October of $716,850, compared with $637,946 in October, 1915, an increase of $78,904, or 12 per cent.

THE MASSACHUSETTS GAS & ELECTRIC LIGHT COMMISSION has authorized issue of 3,180 shares, $100 par, at $225, by New Bedford Gas & Edison Light Company, to cancel obligations incurred in construction.

Current Prices of Public Utility Securities

	Bid	Asked
Adirondack Elec. P.	26	28
Adirondack Elec. P. pf.	85	87
American Gas	120	123
*American Gas & Electric	152	155
*American Gas & Electric pf.	50	52
American Light & Traction	381	384
American Light & Traction pf.	110	113
American Power & Light	77	81
American Power & Light pf.	86	88
American Public Utilities	40	44
American Public Utilities pf.	72	75
American Water W. & Elec.	9¾	10½
Amer. W. W. & E. 1st pf.	67	70
Amer. W. W. & E. part'p pf.	24	27
Carolina Pow. & Lt.	34	38
Carolina Pow. & Lt. pf.	97	100
Cities Service	328	331
Cities Service pf.	92	94
Colorado Power	29	32
Colorado Power pf.	100	104
Commonwealth, Pr. Ry. & Lt.	60	63
Commonwealth, Pr. Ry. & Lt. pf.	83	85
Electric Bond & Share pf.	98	102
Empire District El. pf.	90	95
Federal Light & Traction	16	18
Federal Light & Traction pf.	55	59
Gas & Electric Securities	300	325
Gas & Electric Securities pf.	95	100
Northern States Power	103	105
Northern States Power pf.	99½	101
North. Ont. Lt. & P.	14	17
North. Ont. Lt. & P. pf.	56	61
Ozark Power & Water	44	48
Pacific Gas & Electric	65	66
Pacific Gas & Electric pf.	90	92
Republic Ry & Light Co.	51	53
Republic Ry. & Light Co. pf.	78	80
*Standard Gas & Electric	15¼	16¼
*Standard Gas & Electric pf.	43	44
So. Cal. Edison	90	92
So. Cal. Edison pf.	106	109
Tennessee Ry., Light & Power	11½	12½
Tennessee Ry., Light & Power pf.	50½	51½
United Light & Railways	49½	51
United Light & Railways 1st pf.	79	81
Western Power	18	20
Western Power pf.	69	71

*Par value $50